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ROME'S IMPERIAL ECONOMY

Twelve Essays

W.V. HARRIS



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W. V. HARRIS

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to my Columbia students

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Preface

Eleven of these twelve studies have been published before, as follows (Chapter 2 is new):¹

- 1 T. Yuge and M. Doi (eds.), *Forms of Control and Subordination in Antiquity* (Tokyo and Leiden, 1988), 598–610.
- 3 D'Arms and Kopff 1980 = *Memoirs of the American Academy in Rome* 36 (1980), 117–40.
- 4 *Journal of Roman Studies* 89 (1999), 62–75.
- 5 *Journal of Roman Studies* 70 (1980), 126–45.
- 6 W. V. Harris (ed.), *The Inscribed Economy: Production and Distribution in the Roman Empire in the Light of Instrumentum Domesticum* (supplementary vol. 6 of the *Journal of Roman Archaeology*, Ann Arbor, 1993), 186–9.
- 7 *Cambridge Ancient History* vol. 11, 2nd edn (Cambridge, 2000), 710–39.
- 8 J.-F. Bergier (ed.), *Montagnes, fleuves, forêts dans l'histoire* (St Katharinen, 1989), 123–34.
- 9 C. Zaccagnini (ed.), *Mercanti e politica nel mondo antico* (Bari and Rome, 2003), 275–309.
- 10 *Journal of Roman Studies* 96 (2006), 1–24.
- 11 *Cambridge Economic History of the Greek and Roman World* (Cambridge, 2007), 511–40.
- 12 W. V. Harris (ed.), *The Inscribed Economy: Production and Distribution in the Roman Empire in the light of Instrumentum Domesticum* (supplementary vol. 6 of the *Journal of Roman Archaeology*, Ann Arbor, 1993), 11–29.

¹ The original page-breaks are indicated by vertical strokes.

I thank all concerned for permission to reprint these items. Nathan Pilkington and Anne Hunnell Chen, young scholars at Columbia, have patiently engaged in extensive editorial toil, for which I am very grateful indeed. My debts, often deep, to the many scholars who have helped me in this area are acknowledged case by case. I owe the time needed to put this collection together to the generosity of the Andrew W. Mellon Foundation.

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Abbreviations

The abbreviated titles of literary sources are not included in the following list; in case of difficulty see LSJ, *The Oxford Latin Dictionary*, or *The Oxford Classical Dictionary*. For papyrological publications (including BGU, C.P.Lat., CPR, SB) see J. F. Oates et al., *Checklist of Editions of Greek, Latin, Demotic, and Coptic Papyri, Ostraca and Tablets*, 5th edn (Oakville, CT, 2001).

<i>Acta RCRF</i>	<i>Acta Rei Cretariae Romanae Fautorum</i>
<i>AE</i>	<i>L'Année Épigraphique</i>
<i>AJA</i>	<i>American Journal of Archaeology</i>
<i>ANRW</i>	<i>Aufstieg und Niedergang der Römischen Welt</i> , ed. H. Temporini and W. Haase
<i>BAR-IS</i>	British Archaeological Reports, International Series
<i>Barrington Atlas</i>	<i>The Barrington Atlas of the Greek and Roman Worlds</i> , ed. R. Talbert
<i>BASP</i>	<i>Bulletin of the American Society of Papyrologists</i>
<i>BCH</i>	<i>Bulletin de Correspondance Hellénique</i>
Broughton, <i>MRR</i>	T. R. S. Broughton, <i>The Magistrates of the Roman Republic</i>
<i>CAH</i>	<i>Cambridge Ancient History</i>
<i>Ch.L.A.</i>	<i>Chartae Latinae Antiquiores</i>
<i>CIL</i>	<i>Corpus Inscriptionum Latinarum</i>
<i>CIS</i>	<i>Corpus Inscriptionum Semiticarum</i>
<i>CJ</i>	<i>Codex Iustinianus</i>
<i>CMG</i>	<i>Corpus Medicorum Graecorum</i>
<i>CPh</i>	<i>Classical Philology</i>
<i>CQ</i>	<i>Classical Quarterly</i>
<i>CRAI</i>	<i>Comptes-Rendus de l'Académie des Inscriptions et Belles-Lettres</i>
<i>CSEL</i>	<i>Corpus Scriptorum Ecclesiasticorum Latinorum</i>
<i>C.Th.</i>	<i>Codex Theodosianus</i>
De Ruggiero, <i>Diz. Ep.</i>	E. De Ruggiero (ed.), <i>Dizionario epigrafico di antichità romane</i>
<i>Dial.Arch.</i>	<i>Dialoghi di Archeologia</i>
<i>Dig.</i>	<i>Digesta</i>
Durrbach, <i>Choix</i>	F. Durrbach, <i>Choix d'inscriptions de Délos</i>
<i>EAA</i>	<i>Enciclopedia dell'Arte Antica</i>

<i>EconHR</i>	<i>Economic History Review</i>
Ed.Diocl.	Edictum Diocletiani
<i>Eph.Ep.</i>	<i>Ephemeris Epigraphica</i>
<i>FGrH</i>	<i>Die Fragmente der griechischen Historiker</i> , ed. F. Jacoby
<i>FIRA</i>	<i>Fontes Iuris Romani Antejustiniani</i> , ed. S. Riccobono et al.
GRR	gross reproduction rate
ID	<i>Inscriptions de Délos</i>
IDR	<i>Inscriptiones Daciae Romanae</i>
IG	<i>Inscriptiones Graecae</i>
IGLS	<i>Inscriptions grecques et latines de la Syrie</i>
IGRRP	<i>Inscriptiones Graecae ad Res Romanas Pertinentes</i>
IGSK	<i>Inschriften griechischer Städte aus Kleinasien</i>
IGUR	<i>Inscriptiones Graecae Urbis Romae</i>
ILLRP	<i>Inscriptiones Latinae Liberae Rei Publicae</i>
ILS	<i>Inscriptiones Latinae Selectae</i>
<i>I.Magn.</i>	<i>Die Inschriften von Magnesia am Maeander</i>
<i>Inscr.It.</i>	<i>Inscriptiones Italiae</i>
JÖAI	<i>Jahreshefte des Österreichischen Archäologischen Instituts</i>
JRA	<i>Journal of Roman Archaeology</i>
JRS	<i>Journal of Roman Studies</i>
LSJ	H. Liddell, R. Scott, and H. S. Jones (eds.), <i>A Greek–English Lexicon</i>
LTUR	<i>Lexicon Topographicum Urbis Romae</i> , ed. M. Steinby
MAMA	<i>Monumenta Asiae Minoris Antiqua</i>
MBAH	<i>Münstersche Beiträge zur antiken Handelsgeschichte</i>
MEFRA	<i>Mélanges de l'École Française de Rome, Antiquité</i>
NC	<i>Numismatic Chronicle</i>
<i>Not.Sc.</i>	<i>Notizie degli Scavi</i>
NRR	net reproduction rate
OGIS	<i>Orientis Graeci Inscriptiones Selectae</i>
OLD	<i>Oxford Latin Dictionary</i>
ORF	<i>Oratorum Romanorum Fragmenta</i> , ed. H. [= E.] Malcovati
PBSR	<i>Papers of the British School at Rome</i>
PG	<i>Patrologia Graeca</i> , ed. J.-P. Migne
PIR ²	<i>Prosopographia Imperii Romani</i> , 2nd edn

<i>PL</i>	<i>Patrologia Latina</i> , ed. J.-P. Migne
<i>RAAN</i>	<i>Rendiconti dell'Accademia delle Arti di Napoli</i>
<i>RE</i>	<i>Real-Encyclopädie der classischen Alterthumswissenschaft</i>
<i>RÉA</i>	<i>Revue des Études Anciennes</i>
<i>SCO</i>	<i>Studi classici e orientali</i>
<i>SEG</i>	<i>Supplementum Epigraphicum Graecum</i>
<i>SIG³</i>	<i>Sylloge Inscriptionum Graecarum</i> , 3rd edn
<i>SVF</i>	<i>Stoicorum Veterum Fragmenta</i> , ed. H. von Arnim
<i>TAPhA</i>	<i>Transactions of the American Philological Association</i>
<i>TLL</i>	<i>Thesaurus Linguae Latinae</i>
<i>ZPE</i>	<i>Zeitschrift für Papyrologie und Epigraphik</i>
<i>ZSS</i>	<i>Zeitschrift der Savigny-Stiftung, Romanistische Abteilung</i>

Introduction

THIS COLLECTION

Volumes of collected scholarly articles sometimes give the impression that the scholar was, from the beginning, already perfectly skilled in his or her field of expertise; later, it was simply a matter of applying his or her skills or methods to one problem after another. This book, by contrast, is more like a *Bildungsroman*, in which the hero slowly learns some more or less painful lessons, ending up definitely older if only a little wiser.

Nonetheless I have decided to leave these articles virtually as they were when first published (the paper on poverty is new). Some light editing has left the views I held in the past unconcealed, even in cases where I now think that I was definitely or probably in error. I have indicated in double square brackets the principal passages that I no longer agree with, some omissions of redundant material, and also a few essential items of more recent bibliography.¹ I have eliminated the polemical comments that no longer have any point; many remain, however, with apologies to all concerned. At the end of each reprinted article I have added some brief comments on subsequent debates and research. On the other hand I have not debated here in detail with scholars who have expressed opposing views, for life is short and this book is already long; in the most important cases I hope to continue the discussion in other places. I have left intact almost all citations of older bibliography, even in the paper on the organization of lamp-production (where the documentation was even in 1980 extremely extensive) (Chapter 5). If this has the effect of reminding scholars who are in danger of disappearing beneath avalanches of recent publications that things written on this subject in the 1950s, indeed 1750s, may still be worth reading, so much the better. At the same time, I would not be publishing the book if I did not believe that it would speak to some of the concerns of presently active historians of Rome.

¹ A certain amount of self-repetition is almost inevitable in a collection of this kind, but I have eliminated as much of it as possible.

I confess that I have not changed my mind over any central issue that arises in this book. What are those issues? They are for the most part structural. I have tried to grasp the *shape* of the economy of the Roman Empire, and how it evolved. This may be the best we can do, given the impossibility of answering in any but the most hypothetical way some of the questions that an economic historian would like to have answered, such as the size of Roman GDP, the relative volume of slave labour, the degree of integration of markets, and in particular whether the Roman Empire of any period delivered per capita growth in a sustained fashion (in Chapter 11 I have attempted to show how this question can best be answered as far as the late Republic is concerned).

A good place to begin the study of structural questions about the Roman economy is the matter of social class (Chapter 1) and the related problem of poverty or rather, as I prefer to say, destitution (Chapter 2). In my view there is much to be gained and little to be lost from analysing the population of the Roman Empire in terms of social classes. In my view again, we shall never construct a convincing model of the Roman economy if we do not take full account of the destitution which the Roman Empire inevitably—as I think—created, especially in the provinces. This too is a structural argument: we have virtually no usable statistics of poverty—though there is plenty of anecdotal evidence—and no basis for extrapolating any.

One of the reasons we have generally failed to grasp the extent of Roman poverty is that the Roman economy was in many ways, by the standards of the era, an impressive success. Another reason is that we have paid too little attention, relatively speaking, to labour relations. The recent *Cambridge Economic History of the Greco-Roman World* has characteristically little to say on this subject: the chapter on the eastern Mediterranean tells us that

labor on the land . . . varied in composition. The ‘relative absence’ of servile labor in rural activities has been noted in Asia, being perhaps somewhat more widespread in Greece. Tenancy (embracing a spectrum of dependent statuses), together with the periodic hiring of free labor, was surely a very common means of organizing production.²

Apart from the unavoidable absence of numbers, what strikes one here is the tentative tone—and, even more, the lack of interest in how free and unfree labour of various kinds interacted. I note in passing that the only useful number we have for slaves in any part of Roman Asia under the high Empire (Galen on Pergamum) implies that slave-labour was not ‘relatively absent’ at all.³ For this reason, among others, I have thought it worthwhile to reprint two papers about Roman slavery.

² Alcock (2007: 678). She adds an appropriate footnote. I choose this quotation because the author is a fine scholar.

³ In fact Bussi and Foraboschi (2001) have briefly shown that rural slavery in Roman Asia Minor was extensive.

The first of these papers (Chapter 3) was a preliminary exercise intended above all to establish the large scale of the slave-trade. This involved a discussion of the sources of slaves, especially in the period after Augustus when the intensity of foreign wars diminished. Abandoned infant children figured largely in that argument, and I later wrote a more detailed account of child abandonment in the Roman Empire,⁴ and—in debate with Walter Scheidel—proposed a revised account of the sources of slaves (Chapter 4). The point is not of course to argue that slaves outnumbered the free population in any region.⁵ Nonetheless the role of slavery in the Roman economy was central (see also Chapter 2).

The kind of Roman economy that is portrayed in the papers mentioned so far is implicitly, sometimes explicitly, different by a whole hemisphere from the model—at one time very widely influential in English-speaking lands—proposed by Moses Finley's *Ancient Economy*. The main weakness of Finley's presentation (which has sometimes been faulted to an excessive degree) is probably that it fails to absorb the lessons that are to be learned from the material evidence. Yet, notwithstanding all this, it was Finley's teaching that encouraged some of his successors, including me, to devise alternative models of the Roman economy, for it was he, almost alone among the ancient historians of his generation, who wanted to bring the social sciences in. And even his derision of the material evidence was a great stimulus, since it made some of those who more or less instinctively understood that such evidence was very important formulate meaningful questions instead of simply digging things up or mapping surface finds of ceramics.

How then did production, distribution, and consumption work in the Roman world? How did they function 'operationally', to use a Finleyan word? Consumption patterns, though not ignored in these studies, receive less attention than they deserve.⁶ Production I have attempted to approach mainly through the inscriptions on *instrumentum domesticum* (household objects), the subject of a conference I was able to put together, in combination with Silvio Panciera, in Rome in 1992. Making sense out of the names inscribed on many thousands of terracotta lamps turned out to be rewarding because it proved possible (Chapter 5) to relate the physical material to known social and legal institutions, in particular to the figure of the *institor* or branch-manager, who was afterwards studied to such good effect by Jean-Jacques Aubert.⁷ I came away from this work and from the *instrumentum domesticum* conference more than ever convinced that the Romans (taking that term in the widest sense, as is usual in these pages) were capable of creating complex

⁴ Harris (1994).

⁵ As one might gather from some of the proponents of what might be called the 'insignificant slavery model'.

⁶ See, however, pp. 276–80.

⁷ Aubert (1994).

commercial mechanisms, and also that the question of land-transport costs needed to be revisited. The same conference also made me more sceptical about the role of distribution by large landowners and by emperors, as distinct from trade, in the high imperial economy (Chapter 6 sums up my immediate conclusions in the *instrumentum domesticum* volume).

Hence it suited me very well to write the chapter about trade in the new edition of volume 11 of the *Cambridge Ancient History*, covering the period 70–192 AD, reproduced here as Chapter 7.⁸ From this I hoped that the reader would take away among other things some doubts about the emphatic dichotomy between staples and luxuries which had distorted previous accounts (the influence of this polarity now seems to have diminished),⁹ together with some information about the wide range of economically significant commodities that were traded in the high Roman Empire and the enormous geographical area that was involved, outside the frontiers as well as within them.

Missing from that account was a strong diachronic element, since fundamental patterns of trade are unlikely to have changed within the artificial period in question—though particular Mediterranean regions sometimes took market-share away from other regions. The overall volume of trade may have decreased during and after the Antonine Plague, but the consequences of that event are a highly controversial issue that I do not claim to settle in this book. Still less do I claim to set up any definitive periodization of ancient trade—which is not to ignore the dramatic contrast between the volume of shipwreck evidence from the period from 200 BC to 200 AD (very round numbers) by contrast with what came before or afterwards.¹⁰ If I were to return to this topic now, I would want to explore further the links between trade, specialization in agricultural production, and productivity.¹¹

A topic that would merit still further exploration in the history of ancient trade is river transport. Many scholars have said a little about this, but a larger study would be worthwhile. One of the weaknesses of my study of trade along the River Po in Roman times (a conference paper that has become Chapter 8) was that it was carried out in isolation from the study of other Roman rivers. I should also have studied a much longer *durée*; it would have helped, for instance, if I had read Laven's paper (not yet published at that time) about the rivers of the Venetian Republic in the sixteenth century.¹² I now think that my

⁸ It is worth mentioning that this chapter was ten years in the press.

⁹ Horden and Purcell (2000: 146) put this dichotomy in its historiographical context.

¹⁰ For updated information about this see Parker (2008: 187). But see the important qualifications framed by Wilson (2009a). The well-known fact that this evidence is skewed towards amphora-bearing ships in the western Mediterranean does not come near to justifying the attempt of P. F. Bang (2007: 15 n. 28) to dismiss it altogether.

¹¹ On agricultural productivity in the later Roman Empire, note the comments of B. Ward-Perkins (2005: 144).

¹² Laven (1989).

study of trade along the Po rests on fragile foundations. I based too much on an argument from relative silence. We may have as much evidence about riverine trade along the Po and its tributaries as we have any right to expect. Not that it is a false conclusion that the Via Aemilia and the other main roads of the Po plain greatly facilitated trade and distribution of all kinds.

The physical problems raised by the River Po, together with the Roman road systems in northern Italy, remind us of the question of the role of government in the Roman economy and particularly in the trade economy. The old truism is that in high classical times, governments—whatever that term means or implies in a Roman context—were not much interested. The truth is far more complicated, as I attempted to show in another conference paper (Chapter 9). On the one hand, there were traditional areas of government action—war, the administration and refinement of law, the building of infrastructure. On the other hand, there was from an early date a criss-crossing of public and private interests, which intensified under the emperors. And once again, there are many questions to follow up, such as the apparent emergence in Flavian times of the notion that the government should sometimes control prices.¹³

Another paper printed here (Chapter 10) tends, however, to reduce the significance of the government in economic life, though that was not its purpose. Long-standing doubts about the prevalent notion that the money supply of the Roman Empire was virtually co-terminous with its supply of coins led me to take up the question of credit-money, with some essential consideration of what we mean by money (here, more perhaps than anywhere else in this collection, real economics helped form my opinions). If my argument that credit-money was extremely important is accepted, the effective decoupling of the money supply from the supply of coinage should be taken into consideration when the overall nature of the Roman economy is debated.¹⁴ The strength of the argument, apart from the fact that it explains a goodly amount of otherwise mysterious evidence, is that it reveals ancient ingenuity and complexity without ‘modernizing’ the Roman economy.

Finally, two surveys that attempt to integrate what we know about all the most significant aspects of the Roman economy in two given periods. The one that was written earlier (Chapter 12) puts forward a view that I hope is no longer contested much: this is not simply a matter of arguing that the Roman economy did not lie at either theoretical extreme (in other words, the Roman economy was neither an undeveloped Finleyan affair nor a modern market economy in embryo). It is rather to seek out the specifics of a complex, in some ways extraordinarily successful system, quite unique though always to be compared with other pre-modern economies—and here one must welcome

¹³ See p. 210.

¹⁴ For a further statement of the case, with some additional arguments, see Harris (2008a).

the recent attempts of Scheidel and Bang to compare it with, respectively, the Han and Mughal Empires.¹⁵

A more recent and perhaps more ambitious essay (Chapter 11), a survey of the economic history of the late Republic, addresses the question of growth. Many indicators suggest that in this period at least the Roman economy did indeed achieve some noteworthy per capita growth. But recast the question to consider the lives of the whole population of the Roman Empire and not just those of the more prosperous inhabitants of Italy (thus we circle back to the perspective employed in the chapter on poverty and destitution). Then take into account the destruction of lives and fixed capital brought about by internal wars, and the likelihood of per capita growth mostly evaporates.

Two strategies in particular hold these papers together, though I am acutely conscious of having executed both of them very imperfectly. One is essentially heuristic, and that is making comparisons with the other pre-modern economies alluded to just now. Of course I do not maintain that the shipping practices of ancient Near-Eastern merchants or the monetary practices of early modern England demonstrate anything in particular about the Romans. But let it be underlined that such allusions are not merely arabesques: the point is to explore the inner logic of patterns of economic behaviour, so often *not* revealed to us by the sources. But what are the 'sources'? The other constant in this volume is the conviction, shared of course by many others, that it is foolish to write about problems in economic history, especially though not only Roman economic history, without paying attention to every possible kind of evidence, and more specifically without balancing the many varieties of both material and textual evidence. As a principle, this is a banality—but it is easy to forget.

There are other principles here too, and two of them are worth enunciating because they have been explicitly or more often implicitly contradicted in much of the recent writing about the Roman economy.

1. The whole Roman Empire has to be our subject, and sometimes a still wider area.¹⁶ This should be glaringly obvious in a state in which taxes were drawn from every province, and it does not depend on whether we accept all of Peter Temin's arguments in favour of integrated markets. Yet some scholars continue to write as if Rome and Italy can be isolated from the rest (see Chapter 2 on poverty, for example).¹⁷

¹⁵ Scheidel (2009), Bang (2008). I reject, on the other hand, Bang's attempt to argue (2007: esp. 6 and 14–21) that the approach taken in this paper, simplistically labeled 'a free-market interpretation of imperial economic history', is somehow invalidated by the 'vitality' of the late-Roman economy (on which see below).

¹⁶ This book is after all the work of a historian of Roman imperialism; some of what I wrote in Harris (1979: ch. 2) foreshadows themes that are to be encountered here.

¹⁷ In giving this book its title I intend to emphasize that the Roman economy was an organic whole (and to resist any trend there may be to write about the economies, plural, of the Roman Empire), without asserting any particular degree of integration.

2. A good deal of subjectivity is inevitably involved in writing the economic history of the Roman Empire, yet the intellectual style of many of the scholars in question tends to mask this fact. I have probably been as guilty as anyone else on this score. But it is equally misguided to go to the opposite extreme: there are facts—a few of them at least—and accurate descriptions of them fit some models better than others. Choosing between competing models of how Rome's imperial economy worked is not simply a matter of arbitrary preference.

UNFINISHED BUSINESS

The above summary brings home to me forcefully that there are many vitally interesting questions about the Roman economy I have not addressed or have addressed much too briefly. I have already alluded to several of them—consumption patterns, river-transport, and a whole set of problems to do with debt. But three large problem areas are especially inviting.

First of all, the recent proliferation of work about Roman technology needs a long hard look from economic historians. It is not especially difficult to identify technological improvements—the question is whether they made any large difference to the productivity of a significant number of people.¹⁸ This question is regularly neglected even now. The recent *Oxford Handbook of Engineering and Technology in the Classical World*¹⁹ is often admirable but has extremely little to say on this subject. There is currently quite a spectrum of opinions about the effectiveness of Roman productive technology, ranging from the high though necessarily unquantified estimates of Hitchner and Wilson to those of, for example, Saller and perhaps Pleket, who, while acknowledging that some improvements occurred, consider that their effects were slow and marginal.²⁰

The best way to learn more about this matter may be to concentrate on specific topics and to bring the technical experts face to face with actual economic questions. Agriculture and stock-breeding should remain at the centre of this discussion:²¹ one historian has produced a picture of the 'Roman cow', showing it to be larger than earlier and later cows.²² Quite important if true. There is now a serious as well as a dilettante bibliography

¹⁸ I have sometimes made moderately optimistic statements on this subject (see Chapter 11).

¹⁹ Oleson (2008).

²⁰ Hitchner (2005: 213–16), Wilson (2002), Saller (2005: 235–6), Pleket (2006: 324).

²¹ See now esp. Marcone (2006), Zelener (2006); Brun (2006) gives a useful overview of the controversy about water-mills.

²² B. Ward-Perkins (2005: 145), but note his caveat that 'the sizes are *very* approximate' (211 n. 6).

about Roman food (and a sharp division of opinion about the amount of meat the Romans ate), but there is still more to be done.²³ It was to bring more technical experts into dialogue with economic historians that I organized a conference in June 2009 to discuss the question whether improvements in ship design or in navigation in Roman times had any economic significance.²⁴

Secondly, we need more environmental Roman history. Some of the things we do not yet know about the ancient environment are only connected loosely with the main questions of economic history—the type and degree of deforestation, for example.²⁵ Others are closely linked to it: to what extent, for example, did population growth or other trends drive inhabitants of the Roman Empire to farm marginal lands? Several recent scholars have drawn attention to the steadily increasing evidence that, in some Mediterranean provinces at least, Roman-period irrigation was strikingly effective,²⁶ and there is no doubt more to be said about the consequences for productivity and for the Roman response to the Malthusian impasse—are we, in short, contemplating anything more than a noble but doomed attempt to escape from a cul-de-sac?

Horden and Purcell's *Corrupting Sea* offered ancient historians the chance of a sharp change of direction. It will no doubt remain unclear for some time whether they will follow Horden and Purcell's lead in a useful fashion.²⁷

There is, from my point of view, a third challenge that is more demanding still. In short, what happened to the Roman economy between Diocletian and Justinian or, much better, the Arab invasions? Fortunately more and more scholars are venturing across the traditional ancient/medieval divide, but there are very few who are truly expert on both sides of it, and I do not pretend to be one of them. The last decade has witnessed a number of synthetic accounts of this matter, in which sharply contrasting conclusions are presented. Yet there is in fact something of a consensus.²⁸

This consensus asserts that economic activity declined²⁹ in the western Empire only after the German invasions at the beginning of the fifth century; there was much less 'prosperity' after that date. In the eastern Empire the decline came much later, not starting until the late sixth century or even 600,

²³ Garnsey (1999) and Jongman (2007) are useful recent discussions. On the controversy about the consumption of meat see also below, p. 49.

²⁴ The proceedings of this conference are in the press: Harris and Iara (forthcoming, 2011).

²⁵ On this matter see Harris (forthcoming, 2011).

²⁶ Bagnall (2005: 189–90), Margaritis and Jones (2008: 161–2), Wilson (2008: 309–11; 2009b).

²⁷ The initial reactions are virtually all mentioned in Harris (2005a), which also includes further contributions from Peregrine Horden and Nicholas Purcell.

²⁸ The clearest outliers are the not inconsiderable figures of Banaji (2001) and Bang (2007).

²⁹ Some of those who in essence agree with what follows prefer more euphemistic expressions. It is pointless to complain that the word implies a value judgement: 'prosperity' and indeed any term that judges how well an economy was faring does so too. As to what our criteria are for decline or prosperity, that is another and more interesting matter.

though not in all areas even then. What happened to ‘prosperity’ in certain regions, in particular mainland Greece and the Proconsularis-Numidia section of North Africa, within these two centuries, 400–600, is debated, but the consensus about the rest of the Roman Empire is as I have stated it. And insofar as there was a single underlying cause of the eventual deterioration of economic conditions within what had once been the Roman Empire at its height, it was in fact invasions, mainly though not only German, Persian, and Arab. (In other words, hardly anyone is interested any more in strictly internal weaknesses.³⁰) As for the gap between rich and poor, it receives relatively little attention from economic historians writing about late antiquity (though experts on early Christianity have had much to say on this subject). The one aspect of late-antique labour relations that continues to receive attention is the infamous colonate, which seems once again to have gained recognition as a widespread, though in fact unsystematic, system of oppression.³¹ It remains unclear what all the implications of the development of this institution might be for the general state of the economy. What it meant for very many human beings is, however, perfectly clear: servitude in one form or another.

The consensus is undoubtedly right that there was a sort of bifurcation, roughly speaking between east and west, very shortly after 400—indeed this is merely an economic version of a history that has always been known. Signs of impoverishment, contraction, abatement—what have you—are commonplace in the western provinces, from the first decade of the fifth century onwards,³² and not until after 600 in most of the east, at least the east beyond the Bosphorus.

Yet it is not clear that the right questions are being asked very often. Sometimes they are indeed difficult to frame: how can we discuss per capita incomes in a world as turbulent as that of fifth-century Spain, Gaul, Italy, or North Africa?³³ But that is precisely what we need to do, for otherwise all talk of ‘prosperity’, ‘growth’—and of course the reverse—is meaningless.³⁴ It is all the more to be regretted therefore that recent syntheses have had very little to say about demography. Meanwhile the vast proliferation of archaeological evidence for the centuries in question seems paradoxically to have greatly increased the temptation to make vague generalizations.³⁵

³⁰ But the epidemic of bubonic plague (if that is what it was) that began in the mid-sixth century has recently been receiving more attention (Little 2007).

³¹ See Scheidel (2000) and Giardina (2007: 749–53) for the state of the question.

³² From a few decades earlier, I think, but this is not the place to argue the point.

³³ On the crucial problem of population density, cf. B. Ward-Perkins (2005: 138–46).

³⁴ Cf. Jongman (2006: 244–5).

³⁵ Banaji (2001: 17–20) quotes every structure as if it were evidence for an expanding economy.

A clear framing of the central issues will never in fact be possible as long as we content ourselves with concepts as vague as 'prosperity', 'sophistication', 'vibrancy', 'vitality'. Alan Cameron already made this point some time ago in the course of debunking an attempt to show that Cyrenaica, around 400 AD, was splendidly prosperous.³⁶

If we want to find out whether incomes increased, remained roughly stable, or decreased, if we are going to find out whether economic inequality increased or decreased, we should consider more carefully the validity of various forms of proxy evidence and the validity of various structural arguments. Nothing short of another book could do justice to this matter, and what I have to say here is little more than a provocation and a preliminary reconnaissance.

Long-distance trade, for example, has often been taken as a proxy for the general health of the Roman economy, not unreasonably, and if that is a valid approach there is still very strong reason to believe that the economy of the western half of the Roman Empire as a whole already underwent a decline in the decades around 200, and did not fully recover in the fourth century. This remains true even when we make allowance for the fact that the evidence of Roman shipwrecks is skewed in various ways. Rome's famous mountain of discarded transport amphorae, Monte Testaccio, ceased to grow after the mid-third century.³⁷ There is ample evidence to show that in the western Empire the extraction and smelting of metal ores decreased dramatically after 200, never to recover again in Roman times or indeed medieval times;³⁸ this decrease far outpaced any conceivable degree of depopulation, and proves definitively that the level of consumption of many of the goods that defined Roman material life, especially but not only urban life, fell away steeply. Settlements shrank,³⁹ which is at the very least suggestive. Far fewer grand country-houses were occupied,⁴⁰ and that was not because wealth had been redistributed to the less wealthy. All sorts of conveniences died away, in a spasmodic but definite fashion: just to take the financial sphere, both small change and (according to me at least) fiduciary money largely disappeared;⁴¹ banking declined.⁴² The cumulative force of the arguments that are sketched here is not annulled by the fact that this or that region did quite well in much

³⁶ Alan Cameron (1992: 423).

³⁷ Maischberger (1999: 29), Ward-Perkins (2005: 98). Sometimes the opinion that nothing deteriorated after 200/250 seems to be based in part on lack of awareness of some of the achievements of the first two centuries AD: Lo Cascio (2008: 879) makes this point well.

³⁸ McCormick (2001: 42–53) gives a good summary. Cf. also De Callatay (2005) and (on mining) Lo Cascio (2008: 890–91).

³⁹ McCormick (2001: 32–4).

⁴⁰ For Italy see Marzano (2007: 200).

⁴¹ On small change see B. Ward-Perkins (2005: 110–13). On fiduciary money see below, pp. 247–8.

⁴² Andreau (1986).

later times. ‘The overall economic trend of the Roman world from c.200 to 700 was downward’⁴³—about this I agree with McCormick.

* * *

In short, there is much to do. Curiously, there exists no single book of recent date in any language that provides an overall view of the economic history of the Roman Empire.⁴⁴ This may or may not be a paradox at a time when the subject is teeming with activity as never before. The last such work may in any case be Francesco De Martino’s *Storia economica di Roma antica* of 1980, which is still worth reading but seems thoroughly antiquated, not least because it steers widely clear of archaeology. Moses Finley’s famous synthesis, which is cited in almost every chapter in this book—usually in disagreement—was a terrific tour de force, but it was not a history because it did not attempt to explain historical change. So one goes back to Rostovtzeff and the *Social and Economic History of the Roman Empire*, it too wholly antiquated after eighty years but still a superb example of how to integrate copious quantities of textual and material evidence into a large argument. By now, it would be very difficult indeed to construct a work of comparable range. And even Rostovtzeff did not attempt to explain how the Roman economy came into being, or succeed in explaining how it came to an end. All that I offer here in any case are some fragments for some future Rostovtzeff to throw into the furnace as raw material for a new synthesis.

⁴³ McCormick (2001: 30).

⁴⁴ Drexhage et al. (2002) pretends to be no more than an introduction. As I was writing this, there appeared the survey by Jean Andreau (2010).

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Part I

Structures

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1

On the Applicability of the Concept of Class in Roman History

(1988)

In every city there are three elements (*mere*) of the city, the exceedingly rich, the exceedingly poor, and a third group between these.

(Aristotle, *Politics* 4.11.1295b1–3)

At a meeting devoted to 'Forms of Control and Subordination in Antiquity',* the forms of control and subordination which existed between different peoples in the Graeco-Roman world require a great deal of our attention. But of course there was control and subordination of 'internal' as well as 'external' populations, and a great source of complexity in Roman history is the shift by which 'external' populations—the conquered and otherwise subordinated peoples—became 'internal', some as slaves, some as more or less obedient provincials, others later as citizens, and eventually as senators and indeed emperors.

But how are we to analyse this internal subordination? Partly, it is obvious, by studying such matters as provincial administration, the economic interests of the Romans in Italy and in the provinces, and slavery. It is also obvious enough that one's conditions of life within Roman society were determined by wealth, legal status (free versus slave, etc.) and citizenship, and in addition by social standing or social position or class. Indeed, it must seem a truism to the ordinary reader of the literature of the Roman Empire that the Romans, or at least the ones whose opinions we know, were in the main very class-conscious.

Yet in recent years a number of historians have maintained that the terminology of class is somehow seriously inappropriate in a description of how the world of the Romans worked.¹ Some scholars have tended to suggest instead—although I am not aware of anyone who has adopted this position in

* [[This paper was given on 7 January 1986 at the International Symposium for Studies on the Ancient World organized by the late Professor Toru Yuge at Susono City near Mount Fuji.]]

¹ Alföldy (1975), Christ (1980: esp. 218).

its pure form—that our analysis of Roman social structure should employ only the concepts of the Romans themselves and in particular the concept of *ordo*.² And undoubtedly there existed in Latin and Greek a rich vocabulary of social distinctions.

If we are not fully satisfied with this procedure, what vocabulary is available to us? Insofar as there exists a systematic non-Marxist analysis of the social hierarchy of the Romans, its intellectual connections are with American sociology and the latter's concept of social stratification, and hence with the sources of this kind of analysis in the work of Talcott Parsons and, ultimately, Max Weber. 'Stratification', in any case, is the essential concept here, and the general tendency of those who think in this way is to avoid dichotomies and stress on dichotomous social conflict. A limited exception to this last statement has, however, been provided by Alföldy, who, while rigidly avoiding the natural term 'class', felt compelled to divide all Roman social strata into *Oberschichten* and *Unterschichten*.³

A third kind of analysis does make use of the concept of class. This term may be used in a general sense, just as most of us use it without hesitation or discomfort to refer to the society around us: 'upper-class', 'propertied classes', 'middle-class', 'working-class', and so on; or it may be used in a Marxist sense, which as all the world knows specifically ties it to 'production relations'. The cause of those who think that this last kind of analysis is appropriate to the Graeco-Roman world has been fervently restated by De Ste. Croix, and rejected with equal fervour by some of his critics.⁴

The purpose of this paper is to offer a brief critique of the main arguments that have been put forward in this debate, especially in the last two decades.⁵

² Cf. Finley (1973: 50); but note the reservation 'I do not use "status" as the Romans did when they were speaking juridically' (186 n. 36). In *Politics in the Ancient World*, Finley reverted to 'class', saying (1983: 10 n. 29) that he now used the term 'in the sense intended in ordinary discourse' (as will become clear, I do not believe that there is any other legitimate sense). Against the use of 'class' terminology see also Nicolet (1970: 14), Gabba (1972a: 184). Cf. Pleket (1971), who carefully avoided class terminology.

³ Alföldy (1975). Christ (1980: 218–21) divides the inhabitants of the Roman Empire into five *Schichten*, the first three of which are distinguished by political function; then come *Mittelschichten* and *Unterschichten*, which seem to be separated by some unspecified economic line.

⁴ De Ste. Croix (1981); cf. Padgug (1975: 112) (though he says that the movement from estate-based social distinctions towards 'full social classes' 'was never completed'); González Roman (1977); Schmidt (1978). The most useful critique of De Ste. Croix's book is that of Shaw (1984) (see also Gehrke 1983; Eder 1984). It is not at all clear that a Marxist interpretation of Greek and Roman history requires heavy use of the concept of class: there is very little use of it in Capogrossi, Giardina, and Schiavone (1978), or in Giardina and Schiavone (1981). Carandini maintains (1979: 48) that, according to the logic of Marx's thought, social classes only really came into being with capitalism. There is something to be said for this reading, but there is no getting away from the fact that Marx did sometimes write of 'class struggles' in Graeco-Roman antiquity (De Ste. Croix 1981: 49–69).

⁵ I am aware of how sketchy these remarks are on some aspects of the problem (and they concern only the late Republic and the Principate).

The problem has two parts, a mainly semantic one that is rendered more difficult by the conflict of ideologies involved, and one that concerns the facts of Roman life. I apologize in advance to those of my Anglo-Saxon colleagues who regard semantic investigations as uninteresting. I understand their point of view, which has given rise to such useful discussions of Roman class structure as the vivid and down-to-earth chapter on class in MacMullen's *Roman Social Relations*.⁶ But the semantic beast remains at large and ought to be hunted down.

It seems to me to be a real advantage to discuss this problem in Japan. My Japanese listeners may be able to see it from a perspective which it is difficult for an occidental person to obtain. The word 'class', as used in most European languages, including Russian, has complex associations. The semantic problem might be very different if we discussed Roman social structure not in one of these languages but in Japanese—as it would be if we discussed the matter in Latin or classical Greek—and it is to be hoped that some Japanese scholar will comment on this aspect of the matter.

Incidentally, a book about Japanese social structure which is highly regarded in some circles in the United States maintains that in modern Japan, social classes and horizontal stratification hardly exist, and that there is only the vertical organization of the institution (hence the American reader is led to think that a docile and fragmented working class is the key to rapid economic growth).⁷ I am not at all sure that this description is correct; however it could, I suppose, be argued that all horizontal analysis is also inappropriate for the Roman world. It is possible to argue that we are obsessed by a horizontal or class view of the world because of historical developments which began with the French and Industrial Revolutions and because of the interpretations of those developments which Marx and Marxists have put forward. If we could only free ourselves from | anachronism, so this argument might go on, we would see that horizontal distinctions, or at least those which existed among citizens, were not important in ancient societies.⁸ Whichever of the different types of social-stratification analysis is more suitable for the Roman world, none of them, it might be said, does much to indicate how people interacted with each other in antiquity, or is very fertile for a historian writing about the ancient world.

To this the brief response should be that even among ordinary free citizens, not to mention the senatorial or equestrian orders or slave or semi-slave labour, wealth and power were, to put it mildly, unevenly divided. Many social amenities, such as housing, education, prestige, and the availability of eligible

⁶ MacMullen (1974: 88–120).

⁷ Nakane (1970: esp. 87).

⁸ Gabba (1972b: 84) approaches this position, while of course being well aware of what can be said against it.

marriage partners, were sharply differentiated in antiquity, and this differentiation was systematic in the sense that it corresponded to a man's, or woman's, definable position in society.

Let us now consider in turn each of the types of analysis I have described, beginning with the social strata which the Romans themselves distinguished. There is a simple appeal about sticking to the terminology used by contemporaries; the procedure has an air of purity about it. And having learned to study mentalities, it is natural for us to emphasize the concepts of the Romans themselves. Any description of Roman social structure which cuts across the terminology the Romans employed may indeed be felt to be, at the very least, somewhat metaphysical. The importance of the categories according to which the Romans viewed each other cannot possibly be denied. Whether you were categorized as slave or free, Roman citizen or *peregrinus*, had of course a profound effect on how you were treated and were able to treat others.

The most vital of all distinctions was obviously that between slave and free. There is no need here to elaborate on the distinction or on the intermediate statuses, except to observe that there were always some people who, while remaining slave or free as the case might be, crossed the boundary into the opposite life-conditions: on the one hand, exceptionally well-treated slaves; on the other, a far greater number of more or less tied labourers, especially rural labourers in the provinces. To both groups we shall return.

The most visible of Roman categorizations within the citizen body is the *ordo*, and it has received historians' close attention. It is certainly true that the history of *ordo* terminology reflects a series of important social and political changes. But for several reasons it is an inadequate instrument of analysis. For one thing, an *ordo* is essentially a group of people defined by a *civic* function (most commonly senators, knights or decurions, but also *publicani*, *tribuni aerarii*, or others).⁹ Yet senators and knights were very similar sorts of people,¹⁰ and some of the amenities they enjoyed were shared by well-to-do people who were members of neither order. Of course senators must always have been a fairly distinct social group, and senatorial rank appears as a social distinction even in apolitical contexts.¹¹ The same applies to equestrian rank.¹² Membership of these estates conferred specific rights and general prestige; but the distinction between those on the one hand who were members of a certain

⁹ The literature is extensive: see Nicolet (1966: 175–6), Béranger (1970), B. Cohen (1975), Nicolet (1984). For the flexibility of the term see Cohen (1975: 267–8).

¹⁰ Cf. Garnsey (1970: 238–40).

¹¹ Cf., to cite almost at random, Horace, *Sat.* i.6.76–8: 'sed puerum est ausus Romam portare docendum | artis quas doceat quivis eques atque senator | semet prognatos' ('he [the poet's father] dared to take his son to Rome to be taught the subjects that a knight or senator teaches his offspring').

¹² On the use of equestrian titlature under the principate see Nicolet (1966: 177–88).

ordo (and hence possessed the right to perform certain civic functions) and those on the other hand who, although quite prosperous, were not, did not determine how such people lived their lives or the distribution of amenities other than prestige.

Furthermore, though it was perfectly possible by the time of the elder Pliny (and indeed earlier) to refer to those citizens who were not senators or knights as an *ordo*,¹³ this vast mass of citizens which included both the highly prosperous and the completely indigent is left largely undifferentiated by *ordo* terminology. The phrase 'ceteri ordines', by which Cicero sometimes refers to the citizens who are not senators or knights,¹⁴ was never (so to speak) explicated by him or by any other Roman. And though the *proletarii* and the *capite censi* are referred to in isolated texts as *ordines*, these were technical census rankings and not, at least by the late Republic, everyday social designations.

When the knights were redefined to include everyone who possessed property of 400,000 sesterces—a much-disputed event that in my view did not take place definitively until the time of Tiberius and Caligula—an important social change was being recognized, but it was still an estate that was being defined, and only in a very loose sense a social class.

In the cities the local upper class consisted, broadly speaking, of the local councillors, decurions in the west, *bouleutai* in the Greek world.¹⁵ These were fairly stable groups, but how far they corresponded to an upper class in any terms other than political ones remains to be determined. (In any case, less and less so from about 100 AD on.)

Roman terminology for distinguishing between the social rank or standing of one citizen and another was by no means restricted to words which referred to the *ordines*. Quite apart from the distinctions between freedmen, free-born people who were of freedman parentage, and those who were of *ingenuus* parentage, there were gradations of social standing, very often related to wealth:¹⁶ *summi viri*, *locupletes*, *divites*, *divitiores*, *boni*, and *infimi*, *tenues*, *tenuiores*, *humiles*, *multitudo*. The fluidity of these distinctions in the late Republic hardly needs emphasis, but ultimately one such distinction, that between the *honestiores* and the *humiliores*, became precise.¹⁷ In fact it could be argued that this distinction became, in the second century, the

¹³ Thus he remarks in a famous passage (*NH* xxxiii.29) 'anuli plane tertium ordinem mediumque plebei et patribus inseruere', ('rings clearly inserted a third order in the middle between the people and the senators'). See also Sallust, *BJ* 31.7, which may indeed be intended to reflect the way a *popularis* tribune would have spoken but cannot be dismissed as simply un-rigorous (as by Béranger 1970: 229).

¹⁴ *Ibid.* 236–7.

¹⁵ On the rise of the decurions see Langhammer (1973: 188–236). On the rise of the curial class in the East see Jones (1940: 179–84).

¹⁶ Cf. Béranger (1970: 240), B. Cohen (1975: 272–3).

¹⁷ On the terminology which was used see Garnsey (1970: 221–33).

nearest thing there ever was in classical Roman terminology to a class distinction.

Let us now consider the terminology of social stratification, which, although it has never been applied in a really thoroughgoing way to the Romans, has influenced several accounts of Roman social structure.¹⁸ Could not this instrument, which is undeniably rather useful for the analysis of a complex modern society,¹⁹ also be useful for analysing the social system of the Romans? |

In essence such an analysis describes a sort of ladder composed of many different gradations of social prestige. Individuals can be assigned ranks according to diverse criteria, but in the end the ranking remains primarily a matter of perceived prestige. Such rankings have the advantage of drawing attention to the diverse sources of prestige: at Rome, mainly but not exclusively money, office, military success, and good birth.

The weakness of an analysis of this kind is that radical inequalities in the distribution of wealth, power, and what I have called amenities tend to get lost.²⁰ And life does not consist only of a struggle for prestige; how individual Romans lived depended on how competition and Fortuna had actually treated them in the distribution of wealth, power, and amenities.

This brings us to the language of 'class'. To some extent the difficulty with this word is a semantic problem comparable to the one concerning the word 'imperialism'.²¹ In each case some people would like to avoid the term, and others would like to use it more restrictively than is the custom in ordinary educated discourse. But the rejection of class terminology on the part of some Roman historians is not simply a case of isolated semantic folly. It is fairly evident that those who do so are in varying degrees intent on publicly demonstrating that they are not Marxists. Such demonstrations are intrusive and irrelevant, and it is not in any case Marx or Marxists by themselves who determine the meaning or applicability of the word 'class'. The only source from which the word 'class', in the sense of social class, or indeed any other word in common discourse, can obtain its meaning is from the way it is used—a point to which we shall shortly return.

It would be equally misguided to claim that Marx gave a fully convincing analysis of the socio-economic structure of the Roman Empire (and perhaps few scholars other than De Ste. Croix would now maintain that he did) and to fail to consider the importance in Roman life, which was without much doubt

¹⁸ This applies to MacMullen (1974), Alföldy (1975), and Christ (1980).

¹⁹ Guides and textbooks for this topic are fairly numerous: see e.g. Littlejohn (1972).

²⁰ Cf. the observation of Stedman Jones: 'sociological theories of stratification have been persistently characterized by the evasion or denial of objective economic relationships. At most what is substituted are differentials of income, and the ownership or non-ownership of property', etc. (1976: 301 = 1983: 81).

²¹ Cf. on this Linderski (1984: 153 n. 1).

underestimated by most historians before Marx wrote, of the ownership and non-ownership of the means of production.

What can be said against applying the concept of class to the Romans?

(1) Some say that you cannot have a social class unless it is self-aware, unless it is self-conscious, unless it can 'articulate the identity of [its] interests',²² something which modern social classes are supposed to be able to do and which ordinary Roman citizens and slaves did not do, or did not do very much. It does indeed seem strange to speak of the Greeks and Romans as engaged in class *struggle* when they were unaware of struggling as a class against anyone, and this is a difficulty which De Ste. Croix's book fails to overcome.²³ Class itself, however, is another matter. The notion that without self-awareness there can be no social classes²⁴ derives from the special circumstances of the rise of a more or less militant working class in nineteenth-century European countries. Besides, we need labels for many things the ancients did not label, including elements in and characteristics of their own societies.²⁵ Finally, why should we in fact doubt that most Romans, at every social level, were at least *some|what* aware of their own positions in society? B. D. Shaw suggests in this context that although we hardly have enough information about the 'have-nots' of the Roman world to be able to answer the question, we should not deny them a basic awareness of their subordinate position.²⁶ And it is clear that the Roman rich, for example in 63 BC, sometimes showed a strong sense of their own collective interests.

(2) Another objection to the use of the term 'class' is that it necessarily results in putting some incongruous people in the same social group. Finley makes the point as follows: in such an analysis 'the slave and the free wage labourer would... be members of the same class,... as would the richest senator and the non-working owner of a small pottery.'²⁷ This is certainly a consequence that should give us pause. In response I note that there is nothing sacred about duality: we could have more than two social classes, and De Ste. Croix was obviously quite wrong to suppose that a socially conscious view of antiquity requires historians to fit everyone into the slave-owning category or

²² The expression comes from Thompson, *The Making of the English Working Class* (1966: 9) (for some other remarks about the nature of class in a pre-industrial society see Thompson 1978). The notion has been attributed to Marx (e.g. by Vidal-Naquet 1968: 103), but in his most relevant remarks (*The Eighteenth Brumaire of Louis Bonaparte* [1852], section VII, concerning small-holding peasants in France) he is ambiguous (De Ste. Croix, 1981: 64, is inaccurate about this). Schumpeter wrote confidently, in a passage which is otherwise perceptive, that 'a class is aware of its identity as a whole' (1927, cited from 1955: 107).

²³ Cf. Averil Cameron (1982: 2), Shaw (1984: 212).

²⁴ Incidentally, a Marxist critique of this notion can be found in G. A. Cohen (1978: 73-7).

²⁵ For the rather forced view that the idea of class as such is recognizable in certain Ciceronian texts, see Béranger (1970: 239-40).

²⁶ Shaw (1984: 213-14).

²⁷ Finley (1973: 49).

the slave category (nor, as it happens, does Marx seem to have believed in any such duality).²⁸

In any case I confess that I am not horrified by the thought that most slaves and practically all free wage labourers—a very ill-treated group—might be counted as members of the same social class,²⁹ in spite of the differences between them; still less does this seem inappropriate for the period when the distinction between *humiliores* and *honestiores* began to be formalized, which really meant that the condition of the poorer citizens declined in the direction of servitude. As for the owner of a small pottery, if he is an artisan he works; if the small pottery is merely one of many productive enterprises he owns and he has no need to work, his resemblance to a senator is close enough to be interesting. Those people who drew most of their livelihood from the work done by the strictly controlled labour of others, as was true of practically all members of the Roman elite, may be thought of as having for that reason a common identity and as forming a social class, even if within that class there were steep gradations of snobbery. Nor should one be troubled by the case of Trimalchio. The fictional freedman has been thought to show that a man of wealth was not necessarily a member of the upper class, and hence that a straightforward contrast between an upper and a lower class does not make sense;³⁰ he shows almost the opposite, for was it not just the fact that wealthy freedmen *could* now engage in 'equestrian affectations' (and we are in the age in which imperial freedmen received senatorial honours) that provoked Petronius to satirize them?³¹ They were real intruders into the upper class, not remote outsiders.

Like Finley, Alföldy has complained that a class conception of Roman society does not have room for every important group: where, he asked in effect, do the free landowning peasants and the free artisans fit in?³² But as he half-recognized, a class system does not have to be a two-class system.

²⁸ De Ste. Croix himself momentarily havers (1981: 58). For Marx's views, cf. Shaw (1984: 214–15).

²⁹ When Cicero wrote *De off.* 1.150 ('est enim in illis [mercennariis] ipsa merces auctoramentum servitutis') ('for with them [hired labourers] their very wages are the reward of servitude'), he was not attempting to delineate social classes, but the observation is important all the same (and its philosophical origin does not make it irrelevant). A good conspectus of the evidence on the similarity between wage-labour and slave-labour in the eyes of the ancients is provided by De Ste. Croix (1981: 179–204) (though he seems to miss Chrysippus, *SVF* III. 351 = Seneca, *De Ben.* 3.22.1). See also Nörr (1965), Treggiari (1980).

³⁰ Finley (1973: 50–51).

³¹ On Trimalchio's affectations: D'Arms (1981: 108–16, 118).

³² Alföldy (1975: 132). However, what in his eyes is decisive against a class analysis is that Roman society was stratified not *only* according to economic criteria but according to others which did not coincide with them (who would deny this?): thus decurions could be 'direkt produzierende Bauern', and Trimalchio could not attain high office or social respect. Yet why should anyone want to classify a 'directly producing peasant' who held office in the transformed late-imperial decurionate as a member of the upper class? As for wealthy freedmen, offices were invented for them, and their descendants eventually lost the stigma.

What determines the meaning of a word that belongs to ordinary | speech is how it is used by educated speakers and writers. Words cannot be hijacked by individual political theorists or their followers unless we are inattentive and slothful. It is true of course that a word may receive a new range or colour or connotation from an influential writer, as the word 'class' obviously did from Marx. But the concept of class in the sense of 'social class', which came into circulation in France and England in the 1750s and 1760s,³³ has continued to evolve ever since and is not sectarian property.

Even at a given moment, the meaning of the word 'class' and of its cognates in other languages varies from culture to culture. No one who has lived both in England and in the United States can be unaware of this fact.³⁴ Some of what is said here may well be inapplicable to the French word, or the Italian, or the German. However, I will venture a very brief description of what I think it means in English:³⁵ a class is a segment of a community; its members live at a broadly similar economic level and dispose of broadly similar amenities; their occupations (at least as far as men are concerned) enjoy similar amounts of prestige; they are more or less cut off, or cut themselves off, from social intercourse with members of other classes; and the members tend to share some values which are not shared by other classes. These are all, I think, definitional characteristics of class; but the economic factor is clearly the most essential one of all.

It seems obvious that, according to this description, classes did exist among the Romans.³⁶ We should certainly not experience any difficulty in detecting extreme economic differences among them. Social gulfs and class-specific values are not hard to find. Whether this is a very *useful* way of describing the Roman world remains to be discovered. A more immediate problem is to decide how many social classes existed, which in turn raises the question how much the existence of a class depends on perceived social gulfs separating it from outsiders. Furthermore, a serious difficulty arises from the presence of persons who stand at some intermediate point between what seem to be separate classes. But this also occurs of course in modern societies where the existence of separate classes cannot possibly be doubted.

We must look for radical differences. Ownership or control of the means of production, or the lack of such, will certainly not suffice as a criterion, and we have already seen that there are strong reasons to reject any twofold division of Roman society. It is probably significant that when De Ste. Croix tried to

³³ Calvert (1982: 14–25).

³⁴ It apparently continues to be true that in assigning each other to social classes the English attach more weight than Americans do to occupation and education, and less to income.

³⁵ Here Schumpeter (1927/1955: 105–13) still seems helpful.

³⁶ Hardly an exotic suggestion. 'The *libertas* of the Roman aristocrat meant the rule of a class and the perpetuation of privilege', according to the not uncontested view of Syme (1939: 155).

define 'class' in such a way that there could only be two of them he enmeshed himself in a frightful verbal tangle.³⁷

To provide a hypothesis for others to attack, if nothing more, let us follow the lead offered by Aristotle in the passage of the *Politics* quoted at the beginning of this paper. We could distinguish three classes:³⁸ (1) those sufficiently well-to-do to be able to rely for their livelihoods mainly on the work of slaves or of other dependent labour; for a large proportion of the male family members, some degree of political power, even if only | on a local level, was accessible; a modicum of education, at least, was normal; (2) a separate class of those who possessed, with some degree of security, the minimum amount of land and family labour, or the skill and the shop, that were necessary for independent survival, without having sufficient resources to make heavy use of slaves; citizen rights, Roman and/or local, were normal, but except in some Greek cities political power, at least of a formal kind, was extremely slight; (3) *mercennarii*, dependent labour, almost all slaves; even for those members of this class who were Roman citizens, harsh conditions of life were normal.

The hypothetical nature of this scheme hardly needs underlining. In particular, it remains unclear to what extent non-economic indicators of class differences existed that distinguished these three groups from each other. (Was there a 'labour aristocracy' among the Romans? It seems probable.) And it may very well be that others would prefer to subdivide the classes described.

It hardly needs to be emphasized that Roman social classes were far from static, and some changes are easy to see: the expansion of the *locupletes* and of the servile/semi-servile class in the second century BC, the vast transition by which many members of the intermediate class were driven into the lower class in the second and third centuries AD.³⁹ But the point here is not to write this history, simply to argue that it exists.

If it is admitted that the concept of class can be applied to the Romans, the question still remains how useful or illuminating it is to do so. Only a few remarks on this subject are possible here. It is not immediately clear that great

³⁷ 'A class (a particular class) is a group of persons in a community identified by their position in the whole system of social production, defined [qualifying 'position?'] above all according to their relationship (primarily in terms of the degree of ownership or control) to the conditions of production (that is to say, the means and labour of production) and to other classes' (De Ste. Croix 1981: 43). But in any case this scholar is as high-handed as Humpty Dumpty about definitions (cf. p. 32).

³⁸ The tripartite division (actually quadripartite: they allow for three classes, while denying that label to the 'lumpenproletariat') devised by Utchenko and Diakonov (1970: 8) is constructed solely in terms of means of production and productive labour (the upper class allegedly does not engage in this: contrast the definition of production offered by De Ste. Croix 1981: 35), and while not without interest stands as a warning of how artificial such categories can be.

³⁹ On the latter topic cf. De Ste. Croix (1981: 454–61).

quantities of explanatory power reside in class as far as Roman history is concerned, and the notion of class antagonism is not even necessary to clarify the slave revolts which are the favourite topics of one type of Marxist historiography. In certain conditions, certain kinds of slaves resisted in more or less concerted fashions: these events can be understood without the slightest use of the concept of class. And the historiography of the last seventy years, from Pöhlmann onwards, has shown that attempts to reduce Greek and Roman history to a series of variations on the theme of class struggle can produce terrible contortions and distortions. De Ste. Croix's faith leads him to expect that 'class struggle' will explain the really important events of antiquity, and above all the decline of the Roman Empire. His answer to this last problem is, it must be said, coherent and worthy of close attention. But we might make more progress if our expectations about the usefulness of 'class' were on a less grand scale. If we want to observe the effects of class divisions in this era of Roman history, we might look further at the following topics, among others:

- (1) The administration of law. It cannot really be said that Roman historians or lawyers have fully met the challenge presented forty years ago by J. M. Kelly, who showed how, in Roman private law, class justice prevailed,⁴⁰ not to mention what happened in the provinces. |
- (2) Education. Quite insufficient attention is paid to class differences in the standard books about ancient education; a good place to start studying the matter is in H. C. Youtie's articles about illiteracy in Graeco-Roman Egypt.⁴¹
- (3) Marriage patterns. How much social flexibility was there in the selection of a spouse? There is probably more to be learned beyond the very useful studies of Weaver, Beryl Rawson, and Treggiari.⁴²

I am fully aware that I have had to leave out of this account, for reasons of time, several quite vital sub-problems. One is whether the schema described above can really be applied to the *whole* Roman Empire. In other words, are we discussing a more or less unified or uniform social and economic system? And if we are going to make greater and more self-conscious use of the concept of class, as I would rather hope, more will certainly have to be said about the relationship between social class and defined status (the *ordines* and so on).⁴³ These too are questions for future work.

⁴⁰ Kelly (1966). This is not to overlook such contributions as those of Frier (1980) and Wacke (1980).

⁴¹ Culminating in Youtie (1975).

⁴² Weaver (1972: esp. chs 7 and 11); Rawson (1974); Treggiari (1984). In the same volume as the latter, D'Arms (1984), on Roman dining, is another study in which class distinctions are important.

⁴³ Cf. Shaw (1984: esp. 218–20).

[[Addendum

In a brief discussion Lauffer (1988: esp. 10) came to a somewhat similar conclusion, using different arguments. Cf. also Andreau (1999: 152–3). Günther (1990) provides a reasoned reaction from a Marxist point of view. At first this paper had no resonance whatsoever in the English-speaking world, but more recently it has been taken up in an important paper by Scheidel (2006) (Morley, 2004: ch. 4, evidently made use of it too). It is tempting to think that those who disagree are driven by a reluctance to contemplate the economic disparities well brought out by Bastomsky (1990) and in a different way in Chapter 2 of this book. The account of Rilinger (1985) mainly attested to the author's fear of Marxism. Veyne (2000) freely refers to the Roman *plèbe moyenne* as a class and has many interesting observations, but does not confront the theoretical problem squarely and is in general highly impressionistic. Trigger (2003: 45–6 and ch. 8), who is concerned with 'early civilizations' other than Greece and Rome, argues that they contained social classes, but he usually seems to refer to what I would call social statuses.

This paper aimed to construct a framework. If a whole building had been intended, one would have had to discuss a variety of provinces. It will be enough here to cite Lewis (2000: 92) on Egypt: 'Roman Egypt was a class-driven and class-riven society'; he refers to the *Gnomon of the Idios Logos*.

As for education as an amenity, and the role of literacy in the Roman economy, see Harris 1989a and the addendum to Chapter 12.]]

Poverty and Destitution in the Roman Empire*

INTRODUCTION

When Geoffrey de Ste. Croix chose Van Gogh's *Potato-Eaters* as the frontispiece of his book *The Class Struggle in the Ancient Greek World* he drew attention, unconsciously it seems, to one of a set of differences that suggest that the pre-modern Mediterranean and European world is always likely to have suffered from severe poverty in the sense that a large proportion of the population lived precariously—short of adequate food, shelter, and clothing.¹ For potatoes, like mass-produced cotton and rice, are cheap substances that give the modern poor an advantage over the poor of Mediterranean antiquity.² The latter seem also to have had precious little protection from Malthus's population cycles: few historians believe that the Roman economy ever produced the sort of technological progress or the sort of 'Kuznetsian' growth that alone would have allowed them to avoid population pressure.³ (One might, of course, imagine a Roman Empire in which 'preventive checks', such as raising the age of girls at marriage or increased child abandonment, combined with the spread of improved food-production technology,⁴ would have held off the most severe effects.)

It is now reasonably clear in any case that the Industrial Revolution led to 'only modest and uneven improvements in the health, nutritional status, and

* I thank Jean Andreau, Livia Capponi, Geertje Goldewijk, David Hollander, Paolo Malanima, Reinhard Pirngruber, and Walter Scheidel for information and/or comments on an earlier draft of this paper.

¹ De Ste. Croix (1981). For his comments see pp. 209–10. The temporal limits here will be roughly 100 BC and AD 400.

² For the usefulness of potatoes as a source of calories see e.g. van Zanden (2005: 182).

³ For the distinction between different kinds of growth see among others, Goldstone (2002).

⁴ The summary account of Sallares (2007: 27–34) shows how diet across the ancient world gradually improved for many centuries.

longevity of the lower classes before 1890'.⁵ As far as classical antiquity is concerned, Malthus's words have a horrid ring of truth—which may of course be deceptive: 'misery and the fear of misery' are 'the necessary and inevitable results of the laws of nature in the present stage of man's existence'.⁶ And while Malthus has been subjected to serious criticism, some of the most recent work of economists, Malanima for instance, has shown how, in a world that did not use fossil fuels, demographic expansion, when it did not lead to the exploitation of new land, led inevitably to hunger.⁷

An imperial regime, furthermore, can be expected to have presided over prolonged, if not perpetual, economic exploitation, and the Roman government showed no interest whatsoever, until quite a late date, in the welfare of the population, even the free population, as a whole.

Yet some of those who have written on the subject of Roman poverty, notably Osborne, the well-informed co-editor of *Poverty in the Roman World*, have taken a more optimistic view. While not denying that the sick could suffer from dire poverty or that harvests might sometimes fail, he maintains that Roman poverty was not structural but 'conjunctural' (terminology to which we shall later return).⁸ This judgement, be it noted, effectively differs from that of the author of the most intensive modern study of the subject, Marcus Prell, according to whom, for example, a day-labourer on the land could only have supported a three-person family if he were fortunate enough to find work on (a very improbable) 260 days a year.⁹ Prell's work had a number of defects, however: in particular he paid too little attention to the 98 per cent of the population who lived outside the city of Rome, or at any rate to the (say) 75 per cent of the population who lived outside Italy.

The intractability of the problem stems partly from the fact that, as Scheidel emphasized in an important article in the collective volume just mentioned, it is closely linked with several other very difficult questions, such as the size

⁵ Fogel (2004: 8). The 'escape from hunger and high mortality did not become a reality for most ordinary people [in the industrial world] until the twentieth century'. There is some exaggeration here: in Britain, at least, real wages in many occupations began to rise notably in the 1870s (see Allen 2005: 116–18).

⁶ Malthus (1826: 2.29).

⁷ Malanima (2008: esp. 36–9). For a recent view as to how early-modern north-western Europe escaped the Malthusian trap see Allen (2003: esp. 406–7, 432–3). Temin (forthcoming) argues that the high Roman Empire was able to delay its effects significantly, through the diffusion of productive technology.

⁸ Osborne (2006: 5). The oddest of all recent conclusions on this subject may be that of Rathbone (2006), who concludes (in spite of his knowledge of wage levels) that there was not much poverty in Roman Egypt—because the texts do not mention it much. For his argument from the allegedly low level of poll-tax evasion see below, p. 36. His claim that 'physical disabilities', which were 'not uncommon', 'did not necessarily incapacitate or pauperise their sufferers' (p. 105) is quite remarkable. Not *necessarily*, but rather often.

⁹ Prell (1997: 190). For a still more negative view see Friesen (2004).

of the population of the Roman Empire and the economic growth that its inhabitants may or may not have achieved.¹⁰ It is moreover one of Scheidel's theses that in judging the impact of poverty in an ancient society we should include a wide variety of quality-of-life factors such as health, literacy, and human rights. This notion owes something to Patlagean's well-known book *Pauvreté économique et pauvreté sociale à Byzance, 4e–7e siècles* and something to Amartya Sen's development economics.¹¹ Only by studying such quality-of-life factors can we, according to this line of argument, hope to appreciate the depth—or otherwise—of the poverty that prevailed in a given population.

This is up to a point an attractive and convincing argument, which has the deeply significant effect, when applied to the contemporary world, of contrasting countries that have lowish per capita GDP but high qualitative indicators (Armenia, Tajikistan, Cuba) with countries with high GDPs and low qualitative indicators (Equatorial Guinea, Oman, Saudi Arabia). And there is much more to be said about quality-of-life indicators in the Roman world.

Nonetheless I wish to return, in this paper, to basic economic conditions, and this for three reasons:

(1) Most discussions of Roman poverty either fail to clarify which population they are studying while in practice concentrating on Italy, sometimes even on the capital city alone, or they explicitly admit such limitations.¹² Yet for most of the period under consideration, Rome and Italy, for fiscal reasons among others, were certainly not typical of the Roman Empire as a whole.

(2) We probably need to recognize that the crucial arguments are structural ones—hence I shall have something to say here about the labour market, provincial taxation, and systems of inheritance. This is the best we can do, and it means of course that we shall never be able to quantify Roman poverty in a definitive fashion. Even the proxy evidence has so far proved inadequate: some scholars have claimed that surviving Roman skeletons can virtually settle the whole question, but as we shall see that appears to be premature.

(3) We also have to recognize that in most respects ancient societies fared poorly by most of Sen's criteria (though the differences between them can be of very great historical interest)—for health care did more net harm than good, slavery was taken for granted, the state spent almost nothing on education, and so on. The major open question refers to a more basic level of welfare: did the Roman Empire permit most people to lead a tolerable physical existence?

¹⁰ Scheidel (2006).

¹¹ Patlagean (1977).

¹² Prell (1997) limits himself mostly to Italy (p. 3), in practice mostly to Rome. Jongman (2007), while nominally attending to the Roman Empire, focuses mainly on Italy.

THE QUESTION

Many of us Roman historians would like to know how much poverty there was in the Roman world, but the question is too vague to have much meaning. We have not succeeded in giving a single meaning to the concept of poverty in our own society, any more than the Greeks or Romans succeeded in giving a single meaning to the principal terms that they used. Poverty may in fact be too nebulous a concept to be a useful instrument of historical research. Garnsey and Woolf proposed, for example, that the poor are 'those living at or near subsistence level, whose prime concern is to obtain the minimum food, shelter and clothing necessary to sustain life, whose lives are dominated by the struggle for physical survival'.¹³ That seems too psychological, and what in any case is subsistence?

Some modern definitions have nothing to do with subsistence as such. The European Community has declared that people are below the poverty line if their family incomes are less than 60 per cent of the median family income of the country in which they live.¹⁴ This ruling refers to a real phenomenon and to people who, in a country with inadequate social services, may well be short of food, clothing, or shelter, not to speak of medicines or medical care. But a family may well exceed this norm and consider itself poor, just as one may fall below this line and not be destitute.

In the Graeco-Roman world there were many people who were neither on the one hand destitute nor on the other hand able to acquire without a second thought every purchasable thing they desired. Yet many members of this intermediate group sometimes spoke of themselves, or were sometimes spoken of by others, as poor. Simply to take two Roman examples: Horace famously describes his businessman father as 'macro pauper agello', only to reveal elsewhere that he was prosperous enough to send his son to Athens for further education, just like an aristocrat.¹⁵ Some 300 years later, Hermogenianus seems to define *paupertas* as having less than fifty *aurei*,¹⁶ which if hardly 'une petite fortune' as one commentator has said,¹⁷ meant that one was well above the breadline.¹⁸ In consequence of all this, while it is possible to write the *cultural* history of poverty—to put it telegraphically, what people thought about poverty and the poor—its *economic* history is too slippery to grasp.

¹³ Garnsey and Woolf (1990: 153), adapting the thinking of Sen.

¹⁴ Taken from <http://www.poverty.org.uk>, 15 January 2009. For a succinct critique of poverty lines see Lal and Myint (1996: 30).

¹⁵ *Sat.* 1.6.71. Athens: *Epist.* 2.2.43. At 22, Horace held the high military rank of *tribunus militum*. For other fairly well-to-do *pauperes* see Verboven (2002: 112).

¹⁶ *Dig.* 48.2.10.

¹⁷ Grodzynski (1987: 161).

¹⁸ For another case see Augustine, *Sermo* 356.6 (*PL* 39.1576).

Greek *ptochos* and *penes*, Latin *egens* and *pauper*—and all the other words that refer to persons short on resources—are not of course meaningless terms, but they are highly subjective, flexible, and relative. ‘*Pauper* clearly does not mean pauper’, as one scholar has remarked.¹⁹ The classic Greek word for the very poor is *ptochos*: the dramatist Alexis makes a female character say ‘My man is a *ptochos*, and there’s me, an old woman, and a daughter and the boy our son, and this good girl here, five of us in all. Three of us get a dinner, but the other two share with them a small barley-cake’, and so on.²⁰ Yet even *ptochos* can also refer to a poor person more generally.²¹ Hence we have to move cautiously in face of all ancient statements about the numbers and condition of ‘poor’ people, about things they did and lacked, and about things that were done to them or for them.

Here it is of vital importance that we should operate with a plausible model of Roman social structure. In particular we must avoid, as Scheidel has also argued, a simple dichotomous model of Roman society, a crude division into rich and poor, which tends to make the destitute less visible by bundling them together with those who though they could be labelled poor were not destitute at all.²²

According to a view still widely expressed in the last two decades, there was no middle class in the Roman Empire or anything like it. Not only was a self-conscious middle class lacking—the significance of class consciousness or the lack of it need not be discussed here—almost everyone outside the senatorial-equestrian elite lived just above the level of subsistence.²³ While this model does not of course formally exclude the possibility that many people from time to time fell below the level of subsistence, it apparently helps to distract attention from the latter, in other words from actual destitution.

This binary model is wholly untenable.²⁴ It is theoretically implausible, comparativistically anomalous, and contradicted by a great and increasing

¹⁹ Finn (2006: 136). Deciding who was classified as *pauper* is not going to help us much with the problem at hand. The Roman elite’s inability to focus on actual poverty is suggested by Valerius Maximus’ chapter on *paupertas* (iv.4).

²⁰ Alexis fr. 167 Kassel-Austin (Athenaeus 54e). The same passage is quoted by Garnsey (1999: 113), but my translation differs. Barley was of course humble food. And independent Athens did not tax its poorest citizens.

²¹ The term *ptochos* used in a relative sense: Demosthenes 21.211, Menander, *Dusk*, 285 (each of these passages merits some commentary, but not here). See further Kloft (1988: 82), Prell (1997: 48–9). On the terms *egentes* and *egeni* see Prell (1997: 47).

²² Hence I do not agree with Pleket (1988: 267), when he dismisses it as a matter of little importance whether we think of Roman society as dichotomous or tripartite (not the only options, obviously).

²³ See the gallery of opinions collected by Scheidel (2006: 44–5). Some of them refer to the capital city alone.

²⁴ For some earlier argumentation in favour of a tripartite model see Harris (1988: esp. 605) (reprinted above, p. 24).

mass of research about provincial societies from Egypt to Spain as well as about Roman Italy.²⁵ The sources are fond of a simple dichotomy between rich and poor,²⁶ but they recognize the middling sort as much as we have any right to expect²⁷ and, combined with the material evidence, they show that the Roman Empire at all periods (though more in some periods than in others) was well supplied with people who while not rich enough to behave like *rentiers* had secure possession of resources (land or craft-knowledge, and the things that went with them) sufficient to maintain life without ever falling below the level of subsistence.

Jews and Christians may have developed somewhat clearer ideas about how to define poverty, since they had to decide who to give alms to (Roman civic 'philanthropy' is another matter). There was a formal list, a *matricula pauperum*, at Hippo, as we know from Augustine.²⁸ John Chrysostom seems to define the *penetes* of urban Antioch as those who have 'absolutely nothing' and depend on charity for food and clothing.²⁹ And he goes on to say that they are one in ten of the population, which seems interesting. But the context is his argument that the problem of penury is manageable, and he further goes on to say that there is only one poor person for every 50 or 100 of the others.³⁰ There are no social statistics here; though we might think, on the basis of this evidence, that there can hardly have been *under* 10 per cent of urban destitution in Chrysostom's Antioch.

At all events, the question confronted here is a basic one:³¹ whether those who were able to work could support themselves and, if they were not solitary, their households (a better focus than the family, since the latter is so hard to define clearly).³² We shall not of course lose sight either of the fact that households may help each other, or of the fact that a household may look after some of its members better than others.

Even with this basic question, the direct evidence is clearly not good enough to allow us to quantify our answer to a satisfactory degree, and it would not be good enough even if we were to restrict our enquiry to Italy or Egypt; so we

²⁵ See, in addition to Scheidel (2006), the succinct statement of Crook (1992: 233–4). For Egypt see Bagnall (2005: 198). For Baetica see Haley (2003: esp. 181). Cf. also Christ (1980: 216–17), Veyne (2000).

²⁶ Woolf (2006: 89). No doubt this was a popular perception too: cf. *P.Oxy.* XXXI.2554 fr. 1, lines 10–11 (third century).

²⁷ They fill the pages of Artemidorus' dream-book, for instance.

²⁸ *Ep.* 20.2 ed. Divjak (*CSEL* 88.2.6), the earliest known use of this expression. It is clearly fallacious to assume with Carrié (2003a: 85) that those who drew up such a list relied on quantitative criteria.

²⁹ *In Matt.* 66 (67).3 (*PG* 58.630).

³⁰ Brown (2002: 14) sees that the passage is persuasive rather than analytic but does not mention that John reduced the 10 per cent to 1 or 2 per cent.

³¹ Cf. Prell (1997: 144).

³² Not that the concept 'household' is straightforward to define: see Bagnall and Frier (1994: 57). See further below, n. 88.

must seek for structural arguments and proxy evidence. After some essential scene-setting (Italy contrasted with the provinces, towns contrasted with the countryside) I shall discuss subsistence needs; then I shall argue that both the nature of the labour market and inheritance patterns make it likely that the Roman provinces suffered from a serious level of endemic destitution. I shall suggest that the evidence about child abandonment supports the view that we have generally tended to underestimate the direness and horror of Roman destitution; and finally I shall adhere to the view that no counter-measures significantly diminished the impact of Roman destitution prior to the advent of mass Christianity.

The emphasis will be on 'structural' poverty as distinct from 'conjunctural' poverty, but these terms require definition in the face of quite varied usage. Some economists count the results of bad harvests as 'conjunctural',³³ but harvest failures in the Mediterranean were not by any means rare. If the 'conjunctural' poor are those who 'can be expected to improve their lot in better times',³⁴ then old age too is structural. So, more debatably, is a degree of ill health, especially of course if malnutrition was in fact widespread.³⁵ If you look at the surviving Egyptian census returns, the people who are at most obvious risk of destitution are widows and divorcees living alone with minor children, and in a low life-expectancy regime it was inevitable that there should be quite a lot of them.³⁶ Structural poverty and destitution will in any case be, for the purposes of this discussion, the unavoidable results of the prevailing institutions, physical conditions, and demographic regime. I will return to this matter later.

The conclusion I reach here may be exaggerated. Not all the evidence points in the same direction (the jury is still deliberating about the evidence of skeletons). Thus I have to ask myself whether I am suffering from what Carrié has called an '*a priori* misérabiliste'?³⁷ In other words, am I in fact *presuming* that life for many inhabitants of the Roman Empire was nasty as well as being short? Or are those who disagree averting their eyes from reality?³⁸

What makes the question of Roman destitution important is that the Roman economy was more of a success than any previous economy (in particular we should avoid identifying Roman imperial conditions too closely

³³ E.g. Lal and Myint (1996: 36).

³⁴ Osborne (2006: 1).

³⁵ Grey and Parkin (2003: 287) include the chronically ill and the elderly among the structural poor, but that is unusual.

³⁶ Cf. Bagnall and Frier (1994: 73, 125). On widows and orphans see Krause (1994–95).

³⁷ Carrié (2003a: 98).

³⁸ It should be noted in any case that Carrié (2003a: 101) sets up a false dichotomy when he claims that *either* (a) one is a 'primitivist' who holds that poverty was dominant and structural in antiquity, *or* (b) one thinks that Roman poverty was conjunctural. No reader of this book will suspect that I am a 'primitivist'; I shall nonetheless maintain here that much Roman poverty was structural.

with those of classical Greece³⁹), and very probably more of a success than anything that came afterwards in western Eurasia or North Africa until the major age of European expansion if not later.⁴⁰ Was it then so much of a success that it raised all boats?

ITALY, THE PROVINCES, AND TAXATION

Studies of Roman poverty have often privileged the Italian evidence (whether it is the skeletons on the waterfront of Herculaneum or the imperial *alimenta*) and sometimes even the evidence concerning the capital city. Here I will count all the inhabitants of the Roman Empire as ‘Roman’, even though many of them were never much assimilated to the core culture of Rome, not even in the first years of the fourth century AD, when, by referring to all the inhabitants of the Roman Empire as ‘*provinciales nostri*’ in the preamble to the Price Edict, Diocletian challenges us to ask what sort of economic existence the Roman Empire delivered to the population at large. As for earlier times, we should consider the provincials who sent their taxes to Rome as well as the Roman citizens who did the exploiting. Any other procedure is absurd, for we may take it as rather obvious that Rome really did expropriate some of the resources of its non-citizen subjects. The prosperity of some was—invariably, in ancient conditions—to some extent based on the dispossession of others.⁴¹

There is no need here to review the history of Roman colonization or Roman taxation. For long periods Rome exported both the poor and poverty to allied Italy, later to the provinces. What we do need to ask, however, is whether the impact of taxation on the provincial poor is likely to have been severe, and here we shall have to take account of Hopkins’s ‘taxes and trade’ model, according to which, to put it briefly, the provincials were constrained to produce and to trade in order to pay their rents and the taxes due to the central government, which to a great extent spent these revenues in the provinces, above all on the army.⁴² Nothing in this model—which I find plausible up to a point though weak in one vital respect⁴³—is inconsistent with the main claim that I am putting forward here.

³⁹ Osborne (2006: 4) holds that the physical constraints of the ancient world, such as widespread nutritional deficiencies, were the same in archaic Greece and under the Roman Empire; he might have argued that there were significant differences (better-developed markets, better agricultural and other technology).

⁴⁰ Cf. Jongman (2007: 592–4).

⁴¹ Cf. Horden and Purcell (2000: 272).

⁴² Hopkins (1980; 2002).

⁴³ Howgego (1994: 18), pointing out that the numismatic evidence is not, or at least not obviously, congruent with the ‘taxes and trade’ model, suggested in essence that the system was

It is true, admittedly, that Hopkins argued that the Roman Empire imposed a relatively light tax burden, in keeping with its lack of a huge tribute-exacting bureaucracy. This may well be a fair description of the overall tax burden, though the argument is flimsy. Tacitus on the other hand thought that provincial taxation was generally oppressive.⁴⁴ But what matters here is that the severest impact of taxation, as Hopkins appreciated,⁴⁵ fell on the poor. As Hopkins himself pointed out, a low level of government revenue is quite consistent with a harsh regime of tax exaction—the difference ended up in the pockets of the tax-gatherers.⁴⁶ Tax-payers' audible complaints may not necessarily reflect deep misery,⁴⁷ but on the other hand they may. The government may eventually have grown slightly more solicitous of the provincial poor,⁴⁸ but whether this communicated itself clearly to the government's rank-and-file agents may be doubted.

What we can ask is whether the very poor were required to pay, and the answer is virtually always, as far as we can tell, yes (the elderly were, however exempted from poll-tax, both rich and poor).⁴⁹ Tax-collectors in Egypt from the first century onwards complain that they cannot collect the taxes because villagers have simply fled,⁵⁰ which suggests that it was otherwise very hard to avoid what the standard study of Egyptian taxes called 'a very high tax for a poor man to pay'.⁵¹ (The sick and crippled might obtain a poll-tax exemption from the Prefect.⁵² A solitary papyrus which shows that there was, at one time, an official category of *aporoï*, destitute people, who had *not* fled, is insufficient to suggest that the government remitted taxes simply because of

not in equilibrium, that the provincials often paid their taxes from non-renewable resources or went into debt with Romans. This is the only one of Howgego's objections that Hopkins regarded as 'weak' (2002: 211). To my mind it calls the whole model into question.

⁴⁴ When commenting on the fact that the Batavians were untaxed (they contributed soldiers) he observes that subjects are normally oppressed financially (*Hist.* 4.12). See further Garnsey (1988: 249).

⁴⁵ (2002: 204). For arguments to the effect that the tax burden of the provincials in Asia Minor was not by any means light see Mitchell (1993: 1.256).

⁴⁶ *Ibid.*

⁴⁷ Jones (1959: 39 = 1974: 82).

⁴⁸ Ulpian (*Dig.* 1.18.6.5; cf. 2) states that it is part of the duty of a provincial governor to see that 'tenuis vitae homines' do not suffer from extreme official requisitions.

⁴⁹ Wallace (1938: 116–69) (it was the privileged, in other words Roman citizens and some priests and officials, who were not liable to poll-tax), Neesen (1980), De Ste. Croix (1981: 498–9) (where he points out what seems to be the most progressive piece of known Roman tax-legislation, the *De indulgentiis reliquorum* of Majorian of the year 458), Brunt (1990: 343). In Judaea an itinerant preacher was liable (Matthew 17:25). On the different ages for old-age exemption in different provinces see Neesen (1980: 133). It is not of course explicitly known that the people of every province were liable to poll-tax (cf. *ibid.* 121).

⁵⁰ On this phenomenon Link (1993) serves as a path to the evidence and the literature (though he sees flight as a means of tax evasion more than as a symptom of dire poverty).

⁵¹ Wallace (1938: 136). However it seems reasonably clear that it was sometimes possible to evade the poll-tax by not getting registered: see Bagnall and Frier (1994: 107).

⁵² See *SB* 9105 (late second century), and a few parallels cited by Rathbone (2006: 109 n. 31).

poverty.)⁵³ And a certain proportion of the evidence for complaints about taxation concerns this same social category. When Salvian of Marseilles explained the poverty of the people he knew about, it is taxes that lie at the root of their troubles, depriving them of their land and ultimately their liberty, though it is the rapacity of the well-to-do that finishes off the job.⁵⁴

Incidentally, Rathbone's argument that there cannot have been much poverty in Egypt because otherwise there would have been more poll-tax evasion⁵⁵ founders on two facts: we do not know how many avoided paying by one means or another; and levels of tax-evasion are always determined in part by the strictness of enforcement—which in Roman Egypt was draconian.

Freedom from direct taxation was not Italy's only economic advantage. It was the home of a disproportionate amount of the Roman Empire's capital,⁵⁶ and until well on into the principate its residents received a disproportionate amount of the salaries paid to officials and soldiers.⁵⁷ The contrast between wealthy Italy and poor provincials tends to be masked by the 'provincialization' of the Roman elite, but it is still there in the second century, when for example Galen, in a passage about rural famine to be quoted later, describes the victims as 'many of the peoples (*ethne*) subject to Rome'.

Starting perhaps under Commodus but even more during the military crises of the mid-third century, Italy's fiscal advantage began to diminish.⁵⁸ Under Diocletian or at least under Galerius, it disappeared,⁵⁹ though the capital retained some economic privileges.⁶⁰ None of this will guarantee that there was no destitution in republican or high-imperial Italy, but the poor were at greater risk in the provinces unless they made greater use of the 'preventive checks'.

This regressive but unsystematic system of taxation must have had varying effects on the provincials. A fair number of them were citizens of cities or groupings that enjoyed exemptions, but at the other extreme there was real suffering long after the Roman conquest was past. Two passages of Philo are commonly quoted that no doubt reflect real Egyptian experience to some extent.

They ['the rulers of the cities'] purposely choose as tax-gatherers the most pitiless of men... the tax-gatherers apply their exactions not merely to the property of

⁵³ *P.Lond.* III.911 of AD 149. The certificate presumably entitled the holder to some exemption or other, perhaps on the basis of physical disability.

⁵⁴ *De gubernatione Dei* 5.38–44.

⁵⁵ (2006: 107–8).

⁵⁶ Reinforced by the rules compelling senators to own land there, for which see e.g. Brunt (1990: 515).

⁵⁷ Concerning the Italian *alimenta* see below, p. 52.

⁵⁸ Callu (1969: 320). He speaks aptly of 'parafiscalité'.

⁵⁹ Brunt (1990: 515). ⁶⁰ Lo Cascio (1999).

their victims but to their bodies too, on which they inflict insults and outrages and forms of torture quite original in their savagery,

and so on at length.⁶¹ What is most striking is that Philo's tax-gatherers resort to physical torture. Pollard has gathered the fairly extensive evidence for the use of soldiers in tax-gathering in the eastern provinces. It would be sensible to suppose that similar things happened in many other provinces, from Numidia to Pannonia to Tarraconensis, where appropriate sources are lacking.⁶²

Of course you could not tax beggars, but you could, without particularly intending to, reduce subsistence farmers and others into destitution.

RURAL AND URBAN

The distinction between the two may become more blurred than ever in times of severe need, for (so we would assume) country dwellers would then have moved to towns, where the possibility of emergency aid was sometimes greater. (On the other hand, city authorities occasionally expelled outsiders when famine threatened.)⁶³ Yet at any given time, there were two largely distinct populations. In what proportions is disputed: the general opinion is that no more than 10 or 20 per cent of the population can have been town-dwelling even at the height of Roman imperial urbanization, and while this figure is probably too low for certain regions we had better operate with the consensus number and suppose that in the high Empire at least 80 per cent of the population resided in the country,⁶⁴ and from the fourth century on an even higher proportion.

Literary texts seem to indicate that both town and country had their specific economic risks, but in both cases stereotypes make it very difficult to tell whether urban or rural life was harsher. There should be no need to labour the point that you cannot base an optimistic view of rural poverty on the *Georgics*,⁶⁵ or a pessimistic view of urban poverty on Dio Chrysostom or Juvenal.⁶⁶ We need not in any case decide whether the destitute were a higher proportion of the population in towns or in the countryside. Both town-dwellers and

⁶¹ On *Special Laws* 2.92–6. See further 3.159–64. It is tempting to quote these texts in full. Hopkins (2002: 204 n. 29) describes the latter passage as 'highly rhetorical', but the onus of proof must I think be on those who claim that Roman imperial officials were seldom brutally exploitative. Cf. Josephus, *BJ* 2.273 for Judaea in 62–64.

⁶² See Pollard (2000: 99–104). For late-antique Syria see also Liebeschuetz (1972: 164). There is further work to be done on this topic, as far as the western provinces are concerned.

⁶³ Ammianus Marcellinus 14.6.19 ('peregrini'),

⁶⁴ Cf. Harris (2005b: 30).

⁶⁵ As Prell (1997: 98) apparently does.

⁶⁶ Dio Chrysostom 7.104–5 seems to suggest that work is harder to find in the *polis* than in the country, but he may be thinking of work of a kind that meets with his moral approval.

country-dwellers had their survival strategies. The country-dwellers are crucial simply because they are the bulk of the population.

Certain more or less obvious factors helped the citizens of Rome and of Alexandria: the former could claim subsidized grain, both were exempt from direct taxation. But Jongman must have been in error, as we shall see later, to think that subsidized grain in the ordinary cities of the Empire obviated a serious problem of poverty. And, as is well known, it was precisely in Rome (by contrast with Greek cities?) that Soranus thought that rickets was a surprisingly common condition.⁶⁷ Even in Rome and Alexandria, an influx of the desperate probably meant that beggars were a common sight and hunger a common phenomenon.⁶⁸ But towns offered more economic opportunities, for the resourceful mendicant among others.

In the countryside, the possession of sufficient land (owned or leased) was essential.⁶⁹ Without it, there was only insecure and seasonal labour. But we have no way of knowing how many people tried to survive on farms that were too small or too poor in quality to sustain them. (There is no point in reviewing the inadequate direct evidence about the size of Roman farms, but we shall return to that question in the context of inheritance practices.)

Under the high Empire at least, towns were at a great advantage in any food crisis. A well-known passage in Galen makes this clear. Widespread and repeated crop failures in the provinces led the town populations to collect the peasants' grain and a good part of their pulses and legumes: 'throughout the spring, the country-people ate twigs and the shoots of trees, bulbs and the roots of unwholesome plants...'. He proceeds to describe the medical consequences, of which he had been an eyewitness, clearly in Asia Minor.⁷⁰

Whether we can turn these general impressions about rural poverty into something more precise will depend on structural arguments to which we shall shortly turn: on whether the rural labour market involved a significant number of people who were compelled to try to survive on an absolute minimum of resources, and on whether inheritance patterns inevitably left a significant number of people without enough land. The answer in both cases is once again yes.

⁶⁷ 2.43–4. Not of course that this should be seen simply as a sign of poverty. Lack of sunlight in the overcrowded city probably contributed.

⁶⁸ Grey and Parkin (2003: 288) argue that there was more poverty in Rome than in other cities, and there probably were more widows and orphans.

⁶⁹ Osborne (2006: 4), Scheidel (2006: 45).

⁷⁰ *De probis pravisque sucis* 1 (VI.749–51K) = *De bonis malisque sucis* 1 Helmreich (CMG V.4.2.389), translated in part in De Ste. Croix (1981: 14). For commentary and context see Mitchell (1993: 1.167–70). I am aware of Galen's capacity for exaggerating his first-hand knowledge (Harris 2002: 12). For an optimistic view see Osborne (2006: 5): 'even those [country-people] who did not own land could gather food from the land beyond cultivation'.

MICRO-REGIONS AND CARRYING CAPACITY

In the high Roman Empire, shellfish from the Etang de Berre near the mouth of the Rhône made a very large contribution to the local diet (even though we cannot be sure that the whole population benefited); the same oysters and scallops, when transported to less favoured locations, were very expensive.⁷¹ This was a micro-region, to use Horden and Purcell's terminology,⁷² and in spite of the mobility and interconnectedness of Roman populations, most of the food it consumed came from within or nearby. I have argued elsewhere that 'carrying capacity' is a useful concept to apply to ancient Mediterranean places.⁷³ It could vary enormously according to the availability of such special resources as Provençal *coquillage*. Malthus was still Malthus, but the local population's exposure to 'positive' checks can easily have varied from place to place. All this will be need to be borne in mind during the argumentation that follows.

DESTITUTION AND SUBSISTENCE

The destitute certainly seem to be visible enough in Roman literature—people who are short of the most basic necessities. Martial is the high-classical author most quoted. If you are truly destitute, you have nowhere to sleep, you have no cup, you are dressed in rags and patches, and you have nothing to eat.⁷⁴ Bread and shelter and the prospect of a decent burial are what the ragged beggar lacks.⁷⁵ But this evidence is worth less than historians sometimes suppose: Martial had no doubt seen plenty of beggars, but what he had in mind as he wrote was more likely to be the verses of Catullus on the same theme.⁷⁶ Ultimately there was no doubt a real-life referent, but we cannot possibly say on the basis of literary texts whether the destitute in Domitianic Rome were rather numerous or not. The literary references to the very poor reflect both the literary tradition and the common perception that they were hungry and ill-clad, that they were often homeless, and of course that they begged. For the fourth-century ecclesiastics, the destitute are homeless and dressed in rags,

⁷¹ See Brien-Poitevin (1996), though she is a little too confident that all the local inhabitants had access to this resource.

⁷² Horden and Purcell (2000: esp. chs 3 and 4).

⁷³ Harris (2005b: 14).

⁷⁴ 1.92.5–10. For the sources on begging in the city of Rome and elsewhere see Prell (1997: esp. 52–3, 68–74), Grey and Parkin (2003: 286–7).

⁷⁵ 10.5.3–12.

⁷⁶ Cf. P. Howell's commentary on 1.92 (1980: 299–303).

they lack bread and clothing.⁷⁷ They sometimes blinded their children to make them seem pitiable to passers-by.⁷⁸ Beggars are always elderly, says Epictetus, somewhat ambiguously (the young managed without begging, or the elderly were appallingly vulnerable?).⁷⁹ But none of this gets us very far, especially since it is all urban.

Enormous efforts have gone into determining the caloric requirements of ancient populations, while their other physical needs have been rather neglected. There are all sorts of questions that could be asked, for example whether poor rustics often wore animal skins in life as they did in literature (Diocletian's Price Edict imagines them wearing linen).⁸⁰

But food is clearly the crucial issue. For some time now, many have realized that nutritional needs are affected not only by such physical variables as body weight, age, level of physical activity, and climate, but also to some extent by cultural factors.⁸¹ The historical and/or political presuppositions of the person who is doing the estimating may come into it too. Is it then worth asking what the needs of the population of the Roman Empire are likely to have been?

There is in fact good reason to quantify the population's basic needs, within the limits of the possible. The majority of Romans were not wage-earners, but many were (see below, p. 44, for some evidence that bears on this question), and sometimes their wages are known. In order to understand what these wages meant, we need to estimate the cost of subsistence. In doing so, we must make allowance for several variables: the age structure of the population, price-differences by period and region (everything at Rome was more expensive than in the provinces⁸²), needs determined by climate (you needed more calories and more clothing in the north than in the Mediterranean).

We must look for places and periods for which we know both subsistence costs and wage-rates, and of these there are very few. High-imperial Rome may be one case, lower Egypt is certainly another. In addition, some scholars think that it is possible to learn from Diocletian's Price Edict, even though it is normative not descriptive.

What is a Roman in the Mediterranean world likely to have needed to survive in reasonable health, together with the amount of wheat-equivalent

⁷⁷ Homeless and in rags: Gregory of Nyssa, *De beneficentia* pp. 96–7 Jaeger (PG 46.457B); for bread and clothing see the passage of John Chrysostom quoted earlier.

⁷⁸ John Chrysostom, *Hom. in Epist. I ad Cor.* 21.5 (PG 61.177).

⁷⁹ 3.26.6.

⁸⁰ Dio Chrysostom 7.32 and 62, Lucian, *Timon* 8 and 38 (cf. Tacitus, *Germ.* 46 on the *foeda paupertas* of the skin-wearing Fenni). In fact *centones* (patched garments) may be more relevant (see Liu 2009). Rough linen for *rustici* and *familiarici*: Ed.Diocl. XXVI.31, XXVIII.53, pp. 170, 182 Lauffer.

⁸¹ Also by variations within communities and even within individual lives (Srinivasan 1981—but his views have been heavily contested).

⁸² For the evidence that prices were higher in all large towns see Duncan-Jones ([1974]1982: 345–7).

needed for shelter, fuel, clothing and—an often-forgotten necessity of agrarian life—working animals?

Some modern accounts probably overstate the average Roman calorie requirement, taking insufficient notice in particular of the relatively high proportion of children.⁸³ And there is a certain tendency to suppose that if people survived, they must in fact have been receiving a healthy minimum of calories and basic nutrients—perhaps even in quantities that would satisfy the wishes of modern industrialized countries. But humans do not promptly die if their calorie requirements are not met. ‘They may indeed live for years on end on an inadequate diet’, as is of course still happening in some areas of the world; meanwhile resistance to disease and levels of energy both decrease.⁸⁴ Furthermore—and very important—the very poor did not live solely on wheat or even on barley, the prices of which we often know, but on cheaper things such as chick peas and lupin seeds (hence we may tend to exaggerate the cost of living).⁸⁵

The whole question of Roman malnutrition needs a new treatment that will pay attention to all the major deficiencies that may have affected various sub-populations, not only calories, but especially protein, iron, and vitamin C. Rightly arguing that we must differentiate the life-conditions of the mass of the Roman population, Morley asserts that there is not enough evidence ‘to answer any of our questions about ancient nutritional status’.⁸⁶ Strictly speaking, that is probably true, though in the future palaeo-osteology may radically change the situation. For the present, let us see what we can do.

Since the differences between plausible estimates of the per capita daily calorie requirement of the average inhabitant of the Roman Empire do not in fact differ very much—and since the rough estimate that Hopkins first made some thirty years ago (2000 calories) seems approximately right⁸⁷—no lengthy discussion is needed here. Prell’s estimate for a household of five was 11,800 calories a day (with the single non-domestic worker, a young male, needing 3,600 calories), for an average of 2,360 calories per person.⁸⁸ This seems a little too high. For one thing, very few free people will have performed hard physical labour all day every day of the year: in the countryside all such

⁸³ As a rule of thumb it can be taken that approximately 35 per cent of the population was under the age of 15: Parkin (1992: 144), drawing on the work of B. W. Frier.

⁸⁴ On all this see Clark and Haswell (1970: 21).

⁸⁵ See Petronius, *Sat.* 14, with among others Carrié (2003a: 73).

⁸⁶ Morley (2006: 30).

⁸⁷ Hopkins (2002: 197 n. 11).

⁸⁸ I write of households rather than families, since the Egyptian census records bring out what one would expect of a society with pre-modern mortality, a great variety of familial and extra-familial groupings within single households (and remarriage was fairly common: Bagnall and Frier 1994: 126). For Prell’s calorie count see (1997: 189; his sources: 103). Jongman (2007: 598) too has proposed an average need of 2300 calories a day, without saying what household or family structure he envisages.

labour was seasonal, while even the urban minority took days off, or if they were day-labourers were not hired every day.⁸⁹ Modern figures from an agrarian environment suggest a requirement for a young male working physically for eight hours a day of 3,152 calories, or if he works for four hours a day 2,516.⁹⁰ Slightly more recent FAO figures, applied to classical antiquity by Foxhall and Forbes, suppose that 3,337 calories a day are needed for a 'very active' young male, 2,852 for a moderately active one.⁹¹ Contrast some modern figures from Southern China—climatically not much different from the Mediterranean Roman Empire: in families well-endowed with children and old people, the average calorie requirement goes down to 1,877 if the male worker works eight hours a day, and all the way to 1,673 if he only works four hours a day.⁹²

For those who had to purchase their food, how much is such a minimum likely to have cost? 2,000 calories' worth of cereals would have required about 250 kg of wheat per annum.⁹³ We might think of a poor person's calorie intake as being made up of 80 per cent cereals and 20 per cent other foodstuffs.⁹⁴ Let us suppose for the sake of simplicity that the higher cost of some non-wheat items was balanced by the lower cost of others (garden products, items gathered or scavenged). 250 kg of wheat means approximately 37 *modii*,⁹⁵ which in lower Egypt is likely to have cost, on average, in the first century AD, about the equivalent of HS 2 a *modius* (9 drachmas per *artaba*);⁹⁶ thus the total cost would have been the equivalent of about HS 74 per person per year. Let us suppose that this was, say, two-thirds of the total cost of living (taxes and rents as well as physical necessities): the total is HS 111 a year, HS 555 for a family of five (but rather less because only adult males were liable for poll-tax). If we hypothesize a very high employment rate of 40 per cent, in other words that each worker, on average, supported only 1.5 other persons,⁹⁷ the annual cost would have been about HS 250 (women and small children eat less).

Prices went up (in itself a source of grief to wage-earners). By the period of the Appianus documents from the Fayum (the middle of the third century), the price of wheat had risen from 9 drachmas per *artaba* to an average of over

⁸⁹ Seasonal labour was not simply a rural phenomenon. Building-workers and sailors were affected, for example: cf. John Chrysostom, *De eleemosyna* 1 (PG 51.261), with Rougé (1990: 230).

⁹⁰ Clark and Haswell (1970: 17).

⁹¹ FAO 1973 figures: Foxhall and Forbes (1982: 48–9). For other estimates in the 2,800–3,000 range (for an adult male worker) see Milanovic (2006: 454).

⁹² Clark and Haswell (1970: 17).

⁹³ Hopkins (2002: 197–8), following Clark and Haswell.

⁹⁴ Foxhall and Forbes (1982: 74) suggest that 'grain contributed about 70–75% of the calories in the "average classical diet"', but this would be too low a proportion for the poor. Cf. also Duncan-Jones (1990: 143–4).

⁹⁵ Idem ([1974]1982: 384).

⁹⁶ Idem (1990: 150). ⁹⁷ Scheidel and Friesen (2009: 11).

16 drachmas⁹⁸—not a swift rate of inflation (the worst was yet to come), but still a serious change. Rathbone has calculated that the wheat-equivalent of 2,852 calories a day would on average have cost in that period 170 drachmas a year; say about HS 170.

Too many calculations of this kind have ignored the impact of taxation, or even of all non-food items.⁹⁹ It is indeed difficult to know how much to add for clothing and shelter: some no doubt spent nothing and risked dying of exposure. Marx found some figures for nineteenth-century Ireland: 19 per cent extra.¹⁰⁰ There is now, however, ample early-modern evidence showing that the poor commonly allocate 70 ± 5 per cent of their spending to food, though in extreme conditions the figure rises still higher.¹⁰¹ But what is most illusory about all such figures is that they take no account of the great volatility of the prices of foodstuffs,¹⁰² the factor that is most likely to have driven very poor families over the edge (what that might mean, we shall consider later).

The point of these calculations is to measure the cost of living against known wages, and in Egypt at least that is possible.

THE LABOUR MARKET AND INCOMES¹⁰³

It is not surprising that some scholars are reluctant to recognize a labour market in the Roman Empire, since the Roman historian's imagination usually runs to a world of slave-based estates and semi-autarchic peasants.¹⁰⁴ Yet

⁹⁸ Rathbone (1991: 464).

⁹⁹ Jongman (2007: 599–600), who also attempted to work with a hypothetical grain price applicable to the whole Roman Empire. It is of some interest to note that the *alimenta* rates in Italy varied between HS 120 and HS 240 a year (Prell 1997: 187). The jurist Scaevola quoted a will in which a child's food allowance was set at HS 24 a month (*Dig.* 34.3.28.pr.), but this has nothing to do with the world of the poor. Wheat cost roughly HS 4 a *modius* at the time of Trajan's *alimenta*, according to Duncan-Jones ([1974]1982: 50–51); which means that 250 kg of wheat would have cost HS 148.

¹⁰⁰ *Capital* vol. 1, part 7, ch.25, section 5.f, cited by Milanovic (2006: 454 n. 14). But these figures exclude lodging: they come from workhouse accounts and refer to food and clothing. By extreme contrast Rathbone (1991: 165) argues that shelter, taxes and so on would have added some 147 per cent to the cost of living of the casual workers on the Appianus and related estates.

¹⁰¹ See Allen et al. (2005b: 9), Hoffman et al. (2005: 140–41).

¹⁰² On this matter see Duncan-Jones (1990: 144–5, 150). For early-modern comparanda see Allen et al. (2005b: 9).

¹⁰³ Jongman's attempt (2007: 601–2) to estimate an average wage for the whole Roman Empire on the basis of slave prices fails (the price of a slave supposedly equals the difference between the cost of subsistence and the cost of free labour), not only because he uses the wrong slave prices but for the more basic reason that slaves were to an unquantifiable degree preferable to free labourers for regular employment—they had no rights, or very few.

¹⁰⁴ Finley (1985: 23) (who is followed by Prell 1997: 160–61 on this point) offers no justification for his opinion that there was no labour market except that wages were stable or (he alleges) conventional; this was close to being a dogmatic assumption. Pleket (2006: 319–20)

many worked for wages, in some provinces more than others, and their wages were determined by supply and demand. So too was the cost of slave labour, the only anomaly being that the seller of the labour-power was not the labourer him/herself.

The accounts of the Appianus estate provide us with uniquely good evidence about the proportion of casual labour that was employed in Roman agriculture (and its relevance to the rest of the Roman Empire could be debated at length). The median figure is in any case 59 per cent of the total labour,¹⁰⁵ a strikingly high figure.¹⁰⁶ Thus a very large proportion of the population was dependant on intermittent wages (some of the casual labourers will of course have had small plots of their own).¹⁰⁷ Women could not get casual farm work,¹⁰⁸ though they might enter into the cash economy in other ways, as wet-nurses for example.¹⁰⁹ This high proportion of casual labour on the Appianus estate may be an extreme case, but it is not likely to be vastly different from the cases of other provinces with relatively limited numbers of slaves working on the land.

Modern doctrine has it that changes in real wages in a pre-industrial economy are determined by population growth and decline,¹¹⁰ and all know that after the Black Death real wages rose. We might therefore expect them to have fallen in the period of the so-called 'pax Augusta' from Augustus until at least the time of the Antonine Plague. But if you consider the actual concrete conditions of the labour market, it seems reasonably apparent that a still more important factor is the sub-population of slaves (which is not of course a demographically 'normal' part of the population).

We know pathetically little about Roman wages, and almost nothing about ordinary wages in places where we also know the price of wheat.¹¹¹ But in Egypt we know that 'unskilled' agricultural labourers ('unskilled' is an economist's word—anyone who has known farm-work at anything like close quar-

also rejects the concept, partly at last on the grounds that 'the earnings of small farmers' should not be equated with 'the average wage of a hired worker'; but as far as I can tell no one is proposing that they should be. For an important discussion see Banaji (2001: 197–206).

¹⁰⁵ Rathbone (1991: 153).

¹⁰⁶ And for several reasons, 'the overall reliance on hired workers [on the Appianus estate] ... must have been even more striking' (ibid.). See further Banaji (2001: 202–3). However, Bagnall (1993: 122) appears to suspect that in the fourth century at least wage-labour will have played a smaller role than this.

¹⁰⁷ And note that 'normally ... casual labourers received a cash wage without any bonuses in kind: the exceptions occurred at harvests or the vintage when in all cultures such extras are traditional and to the landowner's benefit—the labourers do not need to go home to eat' (Rathbone 1991: 161).

¹⁰⁸ Ibid. 164–5.

¹⁰⁹ Scheidel (2008: 7), arguing that a fully employed wet-nurse would have earned about one-third of the wage of a male labourer.

¹¹⁰ See e.g. Malanima (2008: 25–6).

¹¹¹ The evidence assembled by Prell (1997: 171–9), while interesting in many ways, almost never satisfies this criterion.

ters knows that there is no such thing on a farm as 'unskilled' work¹¹²) were normally paid from HS 1 to HS 1.2 a day under the high Roman Empire;¹¹³ let us say HS 1 in the first century. To meet expenses of HS 250 a year (see above) seems therefore to be just beyond the capacity of such a man. For the third century, Rathbone reached a still more negative conclusion: a man 'would have had to find casual employment for almost two-thirds of the year' just to maintain himself;¹¹⁴ and that is the maximum number of days that such a labourer is likely to have found work, in this as in any other pre-industrial society.¹¹⁵ Banaji has argued that in Egypt in 314 an 'unskilled labourer' would have had to work 192 days simply to provide himself with a year's supply of grain.¹¹⁶ Meanwhile the census returns of Egyptian households, while they may be misleading in certain respects (they may sometimes, for instance, omit adult males of taxable age), may suggest that a 40 per cent employment rate is too high. Many inhabitants of Roman Egypt probably suffered to varying degrees from destitution, and a whole social class would have disappeared if it had not been for the casual labour of women and children.

How did matters stand in other provinces? In some, the labour market will have operated much as it did in Egypt. In provinces with a higher proportion of slaves (mostly but not entirely the richer provinces),¹¹⁷ the pressure on the free poor will have been still greater; small farmers will have encountered more competition in the marketplace, and for those with little or no land, casual labour will have been hard to come by except at harvest-time.¹¹⁸ The agonomists make this reasonably clear, even though their concern is with large well-capitalized estates. What presumably kept many free people alive was in effect the capital cost of slaves: slave-labour was advantageous to employers if they could afford the initial outlay.

Farm-tenancy has caused Roman historians unnecessary trouble, for there seems to be no space for it in a world of abundant slaves.¹¹⁹ But quite apart from the complex social needs that may have encouraged landowners to make land available to tenants, they could do so on very advantageous terms. The reason for this is obvious enough, and is congruent with my thesis. The tenants were farmers who through poor luck (such as having too many siblings—see below) and/or poor management were near to the edge: for them, tenancy was in Foxhall's words the 'least worst' option. And from the point of view of the large landowner, the sensible thing to do is to relegate

¹¹² For amusing evidence to this effect see Blishen (1972).

¹¹³ Scheidel and Friesen (2009: 12).

¹¹⁴ Rathbone (1991: 165). ¹¹⁵ Scheidel and Friesen (2009: 11).

¹¹⁶ Banaji 2001, 66, based on *CPR* VIII.22.

¹¹⁷ On Baetica, see Haley (2003: 130–31); on Pergamum, a reasonable proxy for the province Asia in this respect, see Harris (1999: 65) (below, p.92).

¹¹⁸ For the under-employment of peasants see Erdkamp (1999: 559–64).

¹¹⁹ See Foxhall (1990) for the most lucid treatment, concentrating on Italy and Greece.

them to places where the climate or the soil is poor, or to 'distant farms'; the better situated land should be worked by slaves.¹²⁰

Several scholars (Prell, Allen, Scheidel) have made serious efforts to extract from the prices and wages given in Diocletian's Price Edict the real significance of the maximum wages: an *operarius rusticus* or a shepherd was to be paid no more than 25 denarii a day.¹²¹ Thus Prell, for example, calculated that if the non-food expenses of such a worker amounted to 50 per cent of his food expenses (and if he were paid the permitted maximum and paid for his purchases at the permitted maximum prices), he would have had to work 180 days a year to support himself alone.¹²² But this reasoning neglects the fact that the Edict explicitly states that such wages were in addition to a subsistence allowance—whose value is completely unknown to us.¹²³

The Price Edict is probably not going to help us. There remains the logic of the labour market, variable of course by period and region but always tending to push the wages of the free down towards the cost of slave labour. For an urban environment, a decree of Paullus Fabius Persicus, governor of Asia (c.44 AD), illustrates the situation well. He instructs the city of Ephesus to stop wasting money by employing free men and replace them with slaves.¹²⁴ (Which also of course suggests that free men had previously been able to insinuate themselves into jobs even though they were more costly.)

INHERITANCE PATTERNS

How many Romans attempted to survive on farms that were too small to provide them with a reliable living? It is impossible to answer this question with direct evidence, but we should consider known inheritance practices. Partible inheritance was the norm for testators and the intestate alike, in both Roman and Greek law. In spite of valuable contributions, the social and economic history of this practice is still to be written. There are many complications, involving demography, dowries, debt, and other matters; I will stick to essential points.¹²⁵

¹²⁰ Columella 1.7.4–6.

¹²¹ VII.1 p.118 Lauffer. See Prell (1997: 198–207), Allen (2009), Scheidel (forthcoming).

¹²² Prell (1997: 205–6).

¹²³ See Allen (2009) for a guess as to the size of these subsistence allowances.

¹²⁴ IGSK XI.1.17–19, col. VI, lines 13–18.

¹²⁵ On the Roman law of succession see Voci (1963; 1967), A. Watson (1971), Kaser (1971: 668–765) (with 1975: 608–13), Champlin (1991), Saller (1994: 163–8). (There is no need here for the bibliography on dowries.) For the eastern part of the Empire most of the useful contributions are about Egypt: Taubenschlag (1944), Rowlandson (1996), Tacoma (2006: 205–29). Lane Fox (1985) ranges more widely.

Not only did both Greeks and Roman habitually divide estates equally among all surviving sons, they also gave an equal portion to daughters. A historian has expressed doubt as to whether among the Greeks a woman's share included a portion of the deceased's land, but in all the places for which he cites evidence land was indeed included.¹²⁶

That partible inheritance really was the general practice of much of the Roman Empire is confirmed by the documents from Egypt.¹²⁷ In older Egyptian law, we are told, the eldest son had a double portion in cases of intestacy, but otherwise all children received equal shares.¹²⁸ Among the Egyptian Greeks, all children shared equally in parents' estates (the many complications concerning dowries and other transfers need not concern us here),¹²⁹ while in Roman law itself 'sons and daughters received equal shares'.¹³⁰ In both Greek and Roman law it was possible to disinherit children, but obviously it was exceptional to do so.

A system of impartible inheritance, obviously, can also lead to individual poverty. The difference is that the non-inheriting sons know from the start that without the assistance of premature death they will have to fend for themselves.

Thus it was *prima facie* a severe danger for a poor family to have more than one child who survived to adulthood.¹³¹ Yet even in a low life-expectation regime, this happened quite frequently, probably in at least a quarter of all families, perhaps in a considerably higher proportion.¹³² Such a family could quite easily descend into indigence. Of course, there were mitigations: co-residence was the most obvious one—a sibling who did not leave home (and it was better if he or she did not marry).¹³³ A man with several brothers might perhaps marry an only daughter, and even if he married a woman with only one sibling, his chances of independent economic survival might be good. But dowries go to the prosperous (or the nobly born) in all societies that practise dowry-giving. Thus even if the population of an agricultural community did not significantly increase, such a community seems certain to have produced a continuous supply of people who could not support themselves. Add in the

¹²⁶ Gallant (1991: 45).

¹²⁷ Rowlandson (1996: 139–75) provides a thorough account of land-inheritance practices in Roman Egypt.

¹²⁸ Taubenschlag (1944: 184–5). See further Rowlandson (1996: 141).

¹²⁹ Taubenschlag (1944: 186), Lane Fox (1985: 218), Rowlandson (1996: 152–71).

¹³⁰ Taubenschlag (1944: 189). A son or daughter who was left out could make a *querela inofficiosi testamenti* (see *Dig.* 5.2).

¹³¹ 'For the poor, [the security of producing more than one son] could be disastrous' (Goody 1976: 90).

¹³² Cf. *ibid.* 133–4. The average Roman *paterfamilias* will have died leaving no more than two children who had reached or were destined to reach adulthood; the point is that this average inevitably included some who left three or more.

¹³³ Cf. Lane Fox (1985: 219). In Egypt brother–sister marriage was a mitigation (Rowlandson 1996: 172). There was also public land available—on disadvantageous terms.

vulnerability of small proprietors to the land-grabbing of their better-off neighbours.

A counter-argument could conceivably claim that many of the peasants in the Roman Empire may not in practice have followed the norms that emerge from the legal sources,¹³⁴ and it is true that even in Egypt very few if any of the surviving wills refer to the estates of small farmers,¹³⁵ but this fact itself may even confirm to some extent that the poorer farmers too were content to have their estates divided equally.

It is not of course to be assumed that all provincial societies followed inheritance practices similar to those of the Greeks and Romans. In fact we know that in Jewish law daughters did not normally inherit if there was a living son.¹³⁶ But as far as I know there is no evidence that any provincial population practised a system of primogeniture.¹³⁷

In so far as Aristotle had any explanation of poverty, it was precisely the system of inheritance.¹³⁸ For long periods the Greeks and Romans had been able to avoid the most severe effects of constantly dividing farms by means of emigration, in other words by seizing the lands of weaker indigenous peoples. Even under the principate, soldiers essentially repeated this pattern by sometimes staying in frontier areas after their discharge, but that was no more than a palliative.

The reason why the Greeks and Romans perpetuated a system that reduced some of them to poverty was plainly that by doing so it benefited the majority. Scholars have pointed out repeatedly that a system of dowries and partible inheritance is a good way of managing risk for an agrarian community as a whole, but it did so at the expense of a stream of unfortunates.

SKELETONS AND DIET

We are sometimes told that the Romans must have been quite well nourished because the skeletons found at Herculaneum show that the inhabitants were

¹³⁴ For considerable variation in practice within early-modern France and England, see Le Roy Ladurie (1976) and C. Howell (1976) respectively. In early-modern Cambridgeshire, 'the smaller and more negligible the holding, the more likely the dying man was to divide it between his sons'; when small farmers fell deeply into debt, they became vulnerable to engrossers (Spufford 1976: 168).

¹³⁵ Harris (1989a: 199, 277), based on the work of Montevecchi; cf. Champlin (1991: 55). Crook (1992: 234) does not alter this picture.

¹³⁶ But in the Roman period the complications were considerable: see Satlow (2005).

¹³⁷ Another way of countering the overall view presented here would be to argue that the inhabitants of the Roman Empire practised effective birth-control on a large scale, and I have been tempted by this argument (Harris 1993a). Most scholars seem sceptical, however: see below, the addendum to Chapter 4.

¹³⁸ *Pol.* 2.3.1265b7–13 (where he explains that while partible inheritance has so far prevented destitution (*aporia*), it will, if it combined with a high birth rate, 'inevitably' lead to *penia*).

taller than the Neapolitans still were in the 1960s.¹³⁹ The reasoning in question has been faulty in various respects, and indeed recent work suggests that stature does not in fact vary directly and reliably with per capita GDP.¹⁴⁰ The Herculanum skeletons furthermore must not be taken as representative of Italy, not only for the obvious but often neglected reason that the age structure of the group of Vesuvius victims in question is atypical of an ancient let alone any other population but because the town had better-than-average access to protein, in the form of fresh fish. And Italy, once again, is not the Roman Empire.¹⁴¹ The 'skeletal' furthermore always assume in practice that their ancient skeletons come from burial grounds in which 'all social strata are represented',¹⁴² a misguided assumption as far as the Roman Empire is concerned (the prospect of a decent burial being precisely one of things that indigent Romans lacked).

The one period of marked increase in European heights was, paradoxically, in the fifth and sixth centuries AD.¹⁴³ In the ninth to eleventh centuries, Icelanders were impressively tall. The most important determinants of height may indeed include genes and (negatively) crowding. The opinion that heights can be used in a simple manner as an index of economic wellbeing seems to have been encouraged by the common observation of the increases in heights that took place in the twentieth century as a result of the great improvement in the nutrition of the populations of the industrial world since the late nineteenth century referred to earlier.

No one will deny, however, that the relatively diminutive stature of southern European populations in the nineteenth century, and until after the Second World War, is a matter of considerable interest, and to some extent the problem of Roman stature must be allowed to remain open.

Coupled with the argument that Roman skeletons show that the population was well nourished we sometimes encounter the argument that ordinary Romans had ample access to meat and fish. This is a question that does need to be settled here,¹⁴⁴ but it is worth noting that once the consumption

¹³⁹ Bisel and Bisel (2002: 455), Jongman (2007: 608), Kron (2008: 80). Gallant (1991: 68–72), and Prell (1997: 102 n. 175) gave accounts of early work on the palaeo-osteology of the classical Mediterranean.

¹⁴⁰ Cf. Koepke and Baten (2005) (and these are authors who exclude genetic factors: p. 73). The great complexities of the subject are now admitted even by those who have argued most strongly that height is a reliable index of economic wellbeing: see Steckel (2005: esp. 240). On the uncertain value of the skeletal evidence see also Allen (2007: 1). The statement of Jongman (2007: 607) that 'stature is an excellent proxy variable for per capita income' is at least in need of extensive reservations (and none of his citations show otherwise).

¹⁴¹ Kron (2008: 79–86) is especially neglectful of this fact (Kron 2005 blandly equates Roman Italy with the Roman Mediterranean).

¹⁴² Koepke and Baten (2005: 73).

¹⁴³ Ibid. 76–7, 90.

¹⁴⁴ Meat consumption in the Roman Empire is a much-debated matter. The opposite poles are represented by Garnsey (1999: 16–17) and by Kron (or by Chioffi 1999). I hope to complete a paper on this subject.

of the well-to-do and of privileged groups such as soldiers is filtered out, the evidence is slight.¹⁴⁵ It is tendentious to say that ‘the quarry workers’ at Mons Claudianus ate ‘meat, fish, and shellfish’, and even more so to imply that ordinary Romans mostly did so too.¹⁴⁶

CHILD ABANDONMENT AS A PROXY FOR POVERTY

It is scarcely necessary to argue again that child abandonment (‘exposure’) was practised to some extent in most parts of the Roman Empire, or that it was only particular populations (non-Greek Egyptians, Jews) that were culturally inhibited from doing so.¹⁴⁷ But it is worth reiterating that the primary, though not the only, compulsion to abandon infants was economic; the action helped others to survive.¹⁴⁸ Since there is every sign that parents parted with their infant children with great reluctance, we can take the practice as proxy evidence for intense poverty. There is unfortunately no way of telling which regions were worst afflicted: a disproportionate amount of the evidence concerns Greek-speaking populations, but no doubt that is because they have left more texts. Most large population groups in the Roman Empire, apart from the Egyptians, Jews, and Germans, probably abandoned a considerable number of infants.¹⁴⁹

‘CONJUNCTURAL’ VERSUS ‘STRUCTURAL’

In the absence of a consistent distinction among scholars between ‘structural’ and ‘conjunctural’ poverty, any attempt to decide whether the population of the Roman Empire suffered from structural poverty may seem futile. Whit-

¹⁴⁵ Kron (2008: 84) uses all texts about animal husbandry as if they were evidence for high meat consumption across the social spectrum. The fallacy is obvious. He also cites archaeological reports that do not in fact support his argument: e.g. Richards et al. (1998: 1251) concluded from an investigation of the Poundbury Camp cemetery near Dorchester that ‘there was a great deal of variation in the isotope values [indicators of animal protein consumption] from the Late Roman period [fourth century], that correlated with variations in burial type....some individuals consumed much more animal protein than others.’ Just as one might have expected. At Isola Sacra the inhabitants ate significant amounts of seafood (Prowse et al. 2004)—and this should be taken fully into account when the lives of the Roman poor are considered.

¹⁴⁶ Kron (2008: 85). In the first place, Mons Claudianus was partly a military site, and hence a locus of privilege; secondly, there was a clear distinction between the well-paid skilled workers and the rest (not to speak of the forced labour) (Van der Veen 1998: 108); thirdly, the fine diet enjoyed by some of those stationed there (Van der Veen) tells us about the high value the government set on granodiorite, not about ordinary living standards.

¹⁴⁷ See Harris (1994).

¹⁴⁸ Ibid. 13.

¹⁴⁹ Ibid. 7.

taker uses 'structural' to refer to poverty that is 'part...of the natural and ordained order of the world',¹⁵⁰ whereas others of us use it to refer to poverty that results from a particular social structure or economic system.¹⁵¹ (My distinguished colleague's use of the word 'conjunctural' to refer to poverty that the poor themselves 'are to blame for' is I hope ironical.) And defining the distinction may simply be impossible: periodic harvest failures were inevitable in the ancient Mediterranean, as was pointed out earlier,¹⁵² so their consequences scarcely seem 'conjunctural'. The poverty of widows and orphans in most pre-modern societies could be described, as Morley has observed, as either conjunctural or as a consequence of the structure of society and its economy (the latter makes more sense).¹⁵³

Nonetheless some factors are clearly more structural than others. Demographic factors—modified Malthus, we might say—meant that from time to time there was bound to be hunger. And far from being fair, the Roman Empire was carefully structured to preserve the privileges of the well-to-do. In almost all periods and places they had solid control over the conditions of labour, and absolutely no incentive to raise the wages of unskilled or semi-skilled workers above the marginal territory that separated starvation and child-abandonment from bare subsistence (bad harvests and other acts of god, together with the fragmentation of inheritances, guaranteed that there would always be new recruits to this social group).

COUNTER-MEASURES

It is occasionally claimed that doles and patronage effectively took the edge off Roman poverty, but recent work has shown the essential falseness of this view. Concentrating on the capital can seriously mislead.¹⁵⁴ It is even, I think, incorrect to say that from the late Republic onwards 'poverty began to be seen as a social and political problem which required some sort of consistent and systematic treatment',¹⁵⁵ for it was Roman citizens who benefited, while the provincials, or at least most of them, paid: poverty as such was never considered a 'problem'. Roman philanthropy, it bears repeating, was civic, and the poor benefited incidentally. That must not obscure the fact that govern-

¹⁵⁰ Whittaker (1993a: 273).

¹⁵¹ Cf. Osborne (2006: 1).

¹⁵² Garnsey (1988: 10) has some interesting figures on the probability of harvest failure (assuming that 1931–60 climate was like the ancient one); e.g. in dry Attica the failure rate for wheat is set at 28%, for seed legumes at 71%.

¹⁵³ Cf. Morley (2006: 28).

¹⁵⁴ Thus Jongman's section on 'public support' (2007: 606–7) is exclusively about what happened in Rome itself.

¹⁵⁵ Osborne (2006: 2).

ment policies sometimes made a real difference, really helped people to avoid destitution. Such was probably the case with the imperial *alimenta* initiated by Nerva and Trajan, which took effect in very many Italian towns and lasted for about a century.¹⁵⁶ Some of the beneficiaries seem not to have been by any means destitute,¹⁵⁷ but it would be absurd to deny that the scheme diminished intense poverty, as long as it lasted. Yet this was a marginal phenomenon in relation to the mass of Roman provincial destitution.

Alexandria, Antioch, Constantinople later, and some of the towns of Egypt, including Oxyrhynchus, eventually established grain-distribution schemes: these will probably have had some marginal effect on poverty but were once again mainly a privilege of the local citizens bestowed with no thought of alleviating destitution.¹⁵⁸ The *sitonia* of the Greek cities of Asia Minor was an occasional office for the purchase of grain,¹⁵⁹ but it can have had very little impact on the lives of the very poor.¹⁶⁰

Roman patronage was a reciprocal institution, and the poorest Romans had virtually nothing to offer.¹⁶¹ So that was seldom a way of escaping. And while Romans must have responded to urban beggars from time to time, since beggars existed, such gifts will only have served as the most minor palliation of the overall phenomenon of poverty.¹⁶²

Given the cut-off point of this paper, we need not decide whether the spread of Christianity made much difference to the destitute in the whole of late antiquity, still less what the underlying motives of late-antique Christian charity were. It would be interesting to consider, in another context, how Constantine came to issue the two rescripts on the subject that are contained in the Theodosian Code, one concerning 'all the municipalities of Italy', the other the African provinces.¹⁶³

Recent scholars have played down the difference between traditional and Christian attitudes,¹⁶⁴ perhaps too much. But the activity of the fourth-century

¹⁵⁶ It is only in a few large and fairly prosperous places that have left a good number of inscriptions, such as Aquileia, Patavium, Verona, and Puteoli, that we can say with confidence that they are unlikely to have participated. *Historia Augusta Pertinax* 9 shows that the system was in deep trouble under Commodus, and even if Pertinax really paid the arrears it is hard to think that it survived the reigns of Septimius and his sons. Carrié (2003a: 85) thinks that the *alimenta* lasted until the late third century, but there is no evidence to this effect and it is unlikely.

¹⁵⁷ Woolf (1990: 206–7). But in my view Woolf underestimates the concern for the poor involved in the foundation of the Italian *alimenta*.

¹⁵⁸ See *ibid.* 213–14.

¹⁵⁹ Pavis d'Escurac (1987: 118). See further Strubbe (1987; 1989).

¹⁶⁰ Carrié (2003a: 79).

¹⁶¹ Verboven (2002: 113): 'everything indicates . . . that the poorest in Roman society rarely, if ever, enjoyed the benefits of patronage because they rarely—if ever—had anything to offer in return.'

¹⁶² Pagan 'alms-giving': Parkin (2006).

¹⁶³ *C.Th.* 11.27.1–2. Cf. Rougé (1990: 237–8), Corbo (2006: 11–22, 66–79) (superficial).

¹⁶⁴ Grey and Parkin (2003), Carrié (2003a: 84).

Christians requires some consideration. On balance we should probably suppose that, from Constantine's time onwards, wealthy churches, for instance in Rome itself, provided a serious safety net for the faithful if they were very poor (for non-Christians?).¹⁶⁵ At the same time, the impact of Christian charity on rural poverty is not likely to have been great. And Christian emperors were more likely to legislate against the interests of the very poor than in their favour: thus in 382 Gratian, Valentinian, and Theodosius ruled that any beggar in the city of Rome who was not *invalidus*—in other words one who was the victim of circumstances or improvidence—could be reduced to quasi-slavery (*colonatus perpetuus*).¹⁶⁶

There is in short every reason therefore to agree with Garnsey's conclusion that 'the ordinary cities of the [ancient] Mediterranean did not develop an extensive framework of institutions and laws capable of protecting the ordinary citizen consumer from hunger and starvation'.¹⁶⁷

CONCLUSION

When in the hereafter the real shape of Roman history is revealed to us, part of it, I suggest, will look like this. After the Hannibalic War, the population of Italy grew steadily, the supply of slaves was abundant, the provincials were squeezed (no revelation there), and real wages fell everywhere.¹⁶⁸ This change increased popular discontent, and Roman-Italian discontent made the civil wars of 88–31 BC possible. Wages in Italy gradually stabilized during that period and down to the 20s (helped by the overseas colonization of Caesar and Augustus), only to fall again in the long term as from the 20s onwards the population once again began to rise. In most of the provinces, the principate was less oppressive financially than the Republic had been, while incorporation into the wider Roman economy had diverse stimulating effects; here too, however, spasmodic population growth had a negative effect on wages, and the structure of the labour market, or rather the structure of society itself, ensured that some not negligible number of people would always be destitute or on the edge of destitution. Meanwhile the authoritarian state prevented any seriously violent expressions of discontent. The 'Antonine Plague' was only a minor blip on the demographic screen, but the civil wars of the third century, fought once again by soldiers with little or nothing to lose, caused heavy casualties; hence the real wages reflected (indirectly) in Diocletian's Price Edict were by Roman

¹⁶⁵ Ambrose discusses the difficult problem of deciding which claimants were genuinely in need, *De off.* 2.76–7, but it remains unclear who would have passed the test.

¹⁶⁶ *C.Th.* 14.18.1. For the context see Corbo (2006: 197–202).

¹⁶⁷ Garnsey (1988: 85).

¹⁶⁸ On the relationship between population and wages see Scheidel (2007: 59).

standards fairly high. But the social structure, though it was evolving, perpetuated a certain level of destitution.

There is no certainty at the end of this discussion. It is possible that one day the evidence of Roman skeletons will show that poverty was a minor and conjunctural matter in the Roman Empire (let it be underlined that they have not yet done so). But the structural arguments set out here seem to make it more likely that most parts of the Roman Empire harboured a population of fluctuating size that was constrained to struggle for life below the level of subsistence. Which does not differentiate it from early-modern Europe.

Part II

Slavery

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Towards a Study of the Roman Slave Trade (1980)

‘Oneravi rursus vinum, lardum, fabam, sepladium, mancipia’; so Trimalchio in his famous—and for historians of Rome, dangerous—‘autobiographical’ statement, as he explains the decisive investment which carried him from the depths of failure to more-than-senatorial wealth.¹ I leave to others the interesting question as to why bacon and beans were good items to transport a long distance to market. My concern in this paper is with the *mancipia*.

The first problem to be discussed is the relative importance of the various sources of slaves in the Roman Empire in the approximate period 50 BC to AD 150.² The topic is not new, and some recent writers have made interesting contributions, notably Shtaerman and Trofimova (*La schiavitù nell’Italia imperiale*) and Biežuńska-Małowist (*L’esclavage dans l’Égypte gréco-romaine*, part 2).³ However, existing theories seem to me to require criticism and modification.

In the second place I shall attempt to set out what can be known or reasonably conjectured about the trade in slaves in this same period, especially

¹ Petronius, *Sat.* 76 (‘I loaded up again, with wine, bacon, beans, perfume and slaves’). I owe thanks for valuable assistance to the participants in the November (1978) meeting of the symposium [[on Seaborne Trade, at the American Academy in Rome; see the Acknowledgements]], and also to Herbert S. Klein and Sarah B. Pomeroy. [[Many of the issues raised in this paper are revisited in Chapter 4. For the places mentioned in this chapter see Map 3.1.]]

² [[These were the dates decreed for the volume in which this article originally appeared. With respect to slavery, it is more]] logical to go back to the 60s BC, when a new period began with the decline of piracy as a source and with a major extension of Roman power in Asia Minor, Syria, and Palestine. Another period in the history of slavery probably ends in the mid-third century AD. These will generally be my horizons in this paper.

³ Shtaerman and Trofimova (1975), Biežuńska-Małowist (1977). [[See now for Asia Minor, Bussi and Foraboschi (2001) and for Roman Egypt, Straus (2004); also the addendum at the end of this chapter.]]





Map 3.1. The Roman Empire of 69 AD and trade

large-scale and long-distance trade, and about the men who conducted it. [[...]]

SOURCES OF SLAVES

Roughly how many slaves were there in the Roman Empire? A full statement of position concerning this question would require one to discuss the history of many different areas; also the history of certain historians and their ideologies, from Wallon and abolitionism to Westermann's *Slave Systems*, Shtaerman and anti-Stalinism (Russian and Italian varieties), and the tacit idealization which infects so much of the best western work on Roman history. In lieu of such a full statement, here are a few central points. The movement away from slave labour in Italy of the first century AD has been exaggerated, with serious misuse for example of the younger Pliny's statement that at a certain location none of the landowners had any *vincti* among the slaves on their estates (*Ep.* 3.19.7), and with general neglect of the fact that tenant farmers themselves sometimes farmed with slaves.⁴ In the provinces, the lack of epigraphical evidence for the existence of large numbers of slaves has been rashly interpreted as evidence that they did not exist,⁵ even though the evidence we have in Italy is for the most part evidence of freedmen, not of

⁴ Pliny's words are 'sunt ergo instruendi, eo pluris quod frugi, mancipiis; nam nec ipse usquam vinctos habeo nec ibi quisquam', 'therefore they have to be fitted out with slaves, honest and correspondingly expensive ones, for I have no chain-gang slaves anywhere, and there nobody has any'. Westermann (1955: 91) incorrectly says that Pliny preferred hired labour to slaves (of any kind), and takes the passage as evidence that slave labour had already been widely replaced by tenant farming in Italy. On the latter point he is followed in Sherwin-White's commentary (1966: 256). This makes it impossible to understand why Pliny should explain to Calvisius that no one 'there' (i.e. at Tifernum Tiberinum, not Comum: see Duncan-Jones 1974: 20) has *vincti*. Clearly they were common elsewhere (see *ibid.* 324 for the other contemporary evidence); and in any case slaves not kept in bonds were another (and, according to Pliny, more expensive) matter. Sherwin-White collects some evidence on tenants farming by means of slaves (add Ulpian in *Dig.* 9.2.27.9); the same point is made by Finley (1976: 114).

⁵ This was constantly Westermann's line. Alföldy (1975: 122) uses as a main argument against the existence of many provincial slaves the fact that the highest number of slaves epigraphically attested in a Norican household is six (*CIL* III.4962), without asking what proportion of slaves in a rather backward and illiterate province could be expected to appear in inscriptions. Even the massive rural *familiae* of Italy are not epigraphically attested. Not that the silence of inscriptions is totally insignificant; one must, for example, be impressed by the fact that at Castellum Celtianum in Numidia inscriptions mention 1,227 citizens and only one slave (Pflaum 1956: 134, also cited by MacMullen 1974: 185 n. 7). [[...]] The relevant bibliography is large. Not to be neglected is Maxey (1938: 1-11). Works of note include Velkov (1967), Mócsy (1970: 183-9), Mangas Manjarrez (1971), Cabanes (1974) (very numerous manumissions in Bouthrotos in Epirus), Daubigney and Favory (1974), Shtaerman et al. (1987[1977]) (western provinces), Marinovich et al. (1992) (eastern provinces), Garnsey (1978: 236-8) (on North Africa), Whitaker (1978: esp. 341).

slaves as such. On the other hand some factors definitely favoured the growth, even the rapid growth, of slave numbers under the principate: in particular the obvious prosperity and Romanization of some provinces. Ancient writers sometimes refer to impressively large numbers of slaves in provincial contexts; the familiar passages hardly need to be quoted, Galen for example on the 40,000 slaves of Pergamum, and Apuleius on the slave *familia*, considerably more than 400 strong, of his wife, Aemilia Pudentilla.⁶ Conditions varied from one area of the Empire to another. In Egypt, to take a province with relatively few slaves, they probably never constituted much more than 10 per cent of the population;⁷ and there were other areas, especially perhaps in the poorer | western provinces, where chattel slaves may never have formed an important part of the labour force.

What then can we plausibly imagine that the slave population of the whole Empire amounted to in this period? Let us use as a hypothesis a total of ten million, i.e. 16.6–20 per cent of what is commonly supposed to be the total population of the Empire in the first century AD. Let me emphasize that this is not intended as a calculation, only as a surmise. Such a procedure is truly necessary, for in the absence of any definite figure, the problem of the relative importance of the various sources of slaves is never properly confronted.

If the slave population remained stable at this level, what level of annual demand is implied? (I am going to assume, in default of evidence to the contrary, that there was no major decline in demand at least until AD 150.) To answer this question, we must first consider the average duration of the slave's period of servitude. This will be lower than the average life-expectation of slaves at the time of their birth, both because a certain proportion of slaves were not born into their condition and because of manumission.

It is necessary to state in passing that to my mind Alföldy's contention that it was the normal fate not only of the urban, but even of the rural, slave to be manumitted is quite unconvincing.⁸ At the centre of his case is a definitely

⁶ Galen, *De priorum animi cuiuslibet affectuum dignotione et curatione* 9 (= V.49 Kühn); the implication is that they were roughly 22–25 per cent of the total population (cf. Duncan-Jones 1974: 264 n. 4, 273 n. 1). Since Galen was writing of his native city, Hopkins's attempt (1978a: 99 n. 2) to dismiss this evidence seems strained. Apuleius, *Apol.* 77, 93 (cf. 102) (with the comments of Gsell 1932: 1.399). On Africa Proconsularis at a much earlier date Cicero, *Fam.* 12.29, is interesting: a member of the Senate with *negotia, procuratores, liberti*, and *familia* in the province.

⁷ Ten per cent is the cautious estimate of Biezuńska-Małowist (1977: 156–8), with no specific date. Fraser's figure of about 400,000 slaves in first-century BC Alexandria (1972: 2.172) seems high.

⁸ See mainly Alföldy (1972: esp. 114–15). The period of servitude was 'oft höchstens ein paar Jahre lang' (120)! (There is no evidence for this, and the implications for the slave-supply are bizarre.) According to Cicero, *Phil.* 8.32, 'captivi frugi et diligentes' ('good hard-working prisoners-of-war') are usually freed before six years are up, but the context is very rhetorical. Dio 53.25.4 probably shows that in Augustus' time some prisoners could expect to gain their freedom before *twenty* years passed.

fallacious argument from the epigraphical evidence.⁹ The reality was that in the countryside manumission was an unusual privilege.¹⁰ Domestic servants and skilled urban workers had more reason for hope, but even for them freedom was very far from automatic.¹¹ In any case it is unsafe to assume that manumission reduced the average period of servitude by more than a very few years. Unfortunately the topic is too large to be discussed fully in this context.

The difficulties in estimating Roman life-expectation have been set forth often enough, and for the slave population they are especially intense. However, it is hard to believe that in the Roman Empire slaves' life-expectation at birth exceeded twenty years,¹² and the average duration of servitude was, for the reasons just stated, shorter than this life-expectation. The point is that the demand for new slaves was, on the hypotheses I have been suggesting, overwhelmingly large: more than half a million new slaves were needed every single year.

In search of the sources of these slaves, we can begin with those who were born as slaves. Any child born to a woman of slave status was according to Roman law *ipso facto* a slave, and this was also normal, probably, in places where pure Roman law did not operate.¹³ Since by the early principate the slave population of the Empire was already very large, some historians have tended to assume that most of the need for slaves could thenceforth be met

⁹ This argument is that far fewer slaves than freedmen are recorded, in inscriptions of certain areas of the western Empire, as having reached ages over 30, 40, and 50. According to Alföldy, this was because virtually all slaves had been freed before the age of 40. In reality, slaves who were commemorated in inscriptions with their ages of death were a tiny and privileged minority of the slave population (e.g. a total of 28 cases is given by *CIL* for northern Italy). If you were such a privileged slave that you were going to be freed, you usually obtained the privilege before you were 40 (on the practice of manumitting young female slaves for marriage see p. 65), but that tells us nothing about the proportion of slaves who were so privileged. Alföldy (1972: 115) in fact sees the objection that the inscriptions refer to a miniscule elite of the slave population, and attempts to counter it by pointing out that many of the slaves in question appear in inscriptions paid for not by themselves but by their owners. This makes not the slightest difference: slaves commemorated by their owners in inscriptions have no claim at all to be typical of slaves in general.

¹⁰ Cf. Treggiari (1969: 106–10).

¹¹ This topic might be worth a systematic new treatment. [[See Wiedemann (1985).]]

¹² Direct evidence hardly exists for Roman life-expectation (cf. Brunt 1971: 132–3), not to mention slaves' life-expectation. Comparative figures from early modern societies have to be treated with great caution unless one is prepared to discard the evidence about ancient infanticide. Average expectation of life at birth was estimated at 20–30 for the whole population by Hopkins (1966–67: 263–4), who promises more on the subject in *Death and Renewal*. Most of the literature was surveyed by Clauss (1973). In fact the most interesting contribution was made by Durand (1959–60) (effectively ignored by Clauss). *Correctis corrigendis* and with some reservations, I believe that Durand's work would justify the statement made in the text. See also Weiss (1973) (of great methodological interest) [[and many later works, esp. Parkin (1992), Frier (2000), Scheidel (2007).]]

¹³ Gaius, *Inst.* 1.82 (*iure gentium*), Ulpian in *Dig.* 1.5.5.5; cf. Dio Chrysostom 15.3.

from this source, in short that the slave population could be nearly self-reproducing. It is believed by many that when prisoners-of-war ceased to be a major source of slaves, which happened at the end of the aggressive wars undertaken by Augustus, it was the fertility of the slaves themselves which provided replacements,¹⁴ that is to say, the deficiency was made up by children born to slave mothers. Replacements were certainly found somewhere, for otherwise we would have expected to see the prices of slaves soaring upwards.

Roman writers do indeed have plenty to say about *vernae* (roughly, home-bred slaves),¹⁵ and it is evident that some of the more privileged urban slaves lived settled domestic lives and are likely to have added significantly to the slave population;¹⁶ and many slave women must have borne children by their owners or by other non-slaves. Home-born slaves were plainly | valued as such and plenty of Latin texts show that it felt comfortable to be surrounded at home by one's *vernae*.¹⁷

But the notion that the slave-population *as a whole* can have reproduced itself is unrealistic, and stems in part from the tendency of historians to soften the realities of ancient slavery. The crucial fact was already partially appreciated by Wallon, namely that the slave-population remained even in the imperial period lop-sidedly male.¹⁸ This was obviously so wherever the work was heavy, and male workers consequently more useful: not only on *latifundia* but on moderate-sized farms, not only in mining but in many kinds of manufacturing, and in many service occupations outside the household. For similar reasons, presumably—to take some typical figures from the Atlantic slave trade—the sex ratio among slaves imported to Cuba in 1791–98 was 230 males:100 females, among those imported to Jamaica in the same years 183 males:100 females.¹⁹ The only ancient slave inventory of significant size known to me, apart from a slightly unclear case to be mentioned shortly, is contained in the list of property belonging to the Athenian Hermokopidai

¹⁴ Boese (1973: 114–16), citing earlier literature. According to Treggiari (1976: 92), the main sources under the principate were breeding and imports into the Empire (but M. Bang showed long ago (1910: esp. 246–7) that the latter source was probably minor). Westermann (1955: 86) was cautious about the relative importance of slave-born slaves.

¹⁵ Not all slave-born slaves became known as *vernae*, however, since they could be put on the market (cf. Treggiari 1969: 2). What led Shtaerman and Trofimova (1975: 17) to write that the overwhelming majority of the *vernae* in inscriptions were not slaves but free-born children, I do not know. For the controversy concerning the exact meaning of *oikogeneis* see most recently Biezuńska-Małowist (1977: esp. 44–9) (full clarity has not, I think, been attained) [[but see now Straus (2004: 235–9)]].

¹⁶ Eventually Ulpian at least advocated a certain respect for the family ties of slaves (see *Dig.* 21.1.35). For the contrary tendency in Egypt cf. Bradley (1978: 246–7).

¹⁷ Horace, *Satires* 2.6.66, *Epodes* 2.65, Tibullus 1.5.26, 2.1.23, Martial 3.58.22 (e.g.). Cf. also Tacitus, *Ann.* 14.44, *ILS* 2848, 6226, 7755, 8346, 8364, 8497a.

¹⁸ Wallon (1879: 1.158, 2.101–4).

¹⁹ Klein (1978: 149–50).

(414 BC): at least 76 per cent of the slaves were male (and at most 7 per cent, be it noted, are described as *oikogeneis*).²⁰

Straightforward evidence about the sex disparity in the Roman slave population is not of course to be expected. And great allowances must be made for regional variations, or more precisely for the difference between the relatively prosperous areas of the Empire, where purchased slaves were common, and the poorest regions; however, even in the latter male slaves probably outnumbered female, mainly because of the presumable tendency to expose more of the female than the male offspring of slaves.

The available evidence falls into a coherent pattern. Treggiari has shown that of the urban household staff of Livia (which is likely to have had *more* female members than a male slave-owner's staff), 77 per cent were male.²¹ This includes slaves and freedmen (N = 79). In the urban *familiae* of the Statilii and the Volusii, according to the same scholar, male freedmen and slaves amounted to about 66 per cent; and among child slaves commemorated in the tombs of these two families, males were at least 80 per cent (N = only 30, however).²² Normal funerary inscriptions hardly provide secure evidence on this topic, since we cannot assume that female slaves were as likely to be commemorated as males.²³ It is certainly of interest, however, that in the Carthaginian *sepulcreta* of the imperial household the proportion of males to females is 76:24 (Weaver's calculation).²⁴ It seems eminently reasonable that in large households male slaves should have outnumbered female ones, and casual references in literary sources suggest that male domestics were commoner than female ones in private households of all sizes.²⁵ A full assessment of this problem would also have to consider in detail the recently published Oxyrhynchus papyrus which reveals the largest slave *familia* so far known in Roman Egypt, that of the prominent Alexandrian Ti. Iulius Theon, who died in 111: at least 59 slaves are listed as members of this urban household, and among them only two were female.²⁶

²⁰ Texts in Pritchett (1953; 1961).

²¹ Treggiari (1975a: 58). The sex ratio was the same among freedmen and slaves.

²² Eadem (1975b: 395, 400); she argues (400–401) that in this case females were not less likely to be commemorated than males.

²³ Compare Treggiari (1979: 77–8).

²⁴ Weaver (1972: 172), with other pertinent evidence; in his view the burial places at Carthage 'were used almost as family *columbaria* by the emperor's slaves and freedmen stationed in Carthage'.

²⁵ Even the cook and the lady's hairdresser are taken to be male: Lucian, *De merc. cond.* 32 (but on the latter occupation note Treggiari 1979: 75); see also Horace, *Sat.* 1.6.116, Juvenal 9.64–7. The epigraphical evidence from Rome is discussed by Treggiari (1976).

²⁶ *P.Oxy.* XLIV.3197. I should point out, however, that in *P.Mich.* V.326 (AD 48) at least 10 of the 18 slaves mentioned are female. Biezuńska-Małowist (1977: 21) asserts that male slaves did *not* outnumber female in Roman Egypt; but even if that is correct, a wealthy Alexandrian household may in this respect be nearer to general Roman practice (few slaves were imported into Egypt except by soldiers or for the very rich). [[See further Bagnall and Frier (1994).]]

For farm labour, owners will have wanted many more male slaves than female. A small farmer might have to put up with whatever *vernae* were going, regardless of their sex, and a large farm would naturally need some female workers such as *lanificae*, clothes-makers, and *focariae*.²⁷ But the discussions of Varro and Columella as to which of the more trusted male slaves might be allowed women to live with them show what a privilege this was. One should take care, according to Varro, to | encourage the loyalty of 'praefecti' of the slaves by giving them, among other things, 'coniunctas conservas, e quibus habeant filios', 'slave partners, from whom they may have sons'; the rewards for ordinary slaves are less lavish.²⁸ It is the *vilicus*, according to Columella, who needs to have a *contubernalis mulier* assigned to him.²⁹ There were likely to be other female slaves on the large estate, including *conservae* provided for the remote shepherds,³⁰ but it is implicit that female slaves need not be numerous in relation to the males. And *ergastulum* slaves of all kinds will have been almost exclusively male. Much more work needs to be done on provincial slavery, but wherever there were purchased slaves the sex ratio is likely to have been out of balance, with males in the majority; and so it must have been with the slave population of the Empire as a whole.

An additional factor limiting the slave population's ability to reproduce itself is that the slave most likely to be manumitted was in general the nubile female slave. Female manumissions probably outnumber male, and they seem to be concentrated among the young: the essential reason was that these slaves, precisely those needed for the fertility of the slave population, were manumitted for marriage, with the result that their children were normally free.³¹

Whereas in some other slave societies the birth of children to slave women has tended to restore the natural sex ratio, this was impeded in the Roman case by the practice of exposing children—treatment which was inflicted on and killed more females than males. Thus the replacements continually had to be found outside the existing slave population; and these new slaves must have been, for the usual reasons, disproportionately male.

The main reason why an owner might in theory have wanted to have a high ratio of female slaves was precisely to save money by breeding more slaves. But 'breeding', a word often used in this context, is vague, and we might find it useful to distinguish between encouraging such female slaves as were kept as

²⁷ For these jobs see e.g. *Dig.* 33.7.12 (with the comments of Brunt 1971: 707). Martin (1974: 288) does not convince me that Columella 12.3.6 envisages any great number of women working outdoors on the estate.

²⁸ Varro, *RR* 1.17.5, 7.

²⁹ Columella 1.8.4.

³⁰ Cf. Varro, *RR* 2.10.5.

³¹ For populations in which freedwomen outnumber freedmen, and the connection of this phenomenon with marriage, see Alföldy (1972: 111–12), Hopkins (1978a: 139–40, 169); cf. also Biezuńska-Malowist (1977: 145).

workers for their own sake to have children, and acquiring more female slaves than could be usefully employed in order to increase the number of *vernae*. In fact the latter procedure was probably abnormal: so at least Ulpian assumes.³²

How much then did Roman slave-owners favour childbearing by their slaves, and if they did, how successful were they in promoting it? Enormous questions once again. Varro pays attention to the matter only in the case of slaves who are *pastores*; and though it is clearly his belief that they should be encouraged to have children, he does not emphasize the point heavily. Neither does Columella, though he speaks of the rewards which he has given to *feminae fecundiores*: for example, time off from work for a mother of three, and freedom in the occasional case of a mother of four or more.³³ The majority of slave mothers in Italy, it can be assumed, did not bear and bring up even three.³⁴ It seems to have been thought desirable to have some *vernae*—superior slaves—in a large household, and care had to be taken to produce them; but rank-and-file slaves could probably be obtained more cheaply on the market.³⁵ There has been considerable confusion among scholars on this point, partly because the most luxurious slaves of all were also *empticii* (purchased slaves)—so that relying on *vernae* could be a sign of frugality.³⁶ In other words there were three layers of slaves—expensive *empticii*, highly valued because of skill or sexual attraction; *vernae*, less expensive to obtain but still requiring a substantial investment; and the cheaper *empticii*, usually not very polished or skilled but adequate for most slave tasks.³⁷

³² Dig. 5.3.27: ‘ancillarum etiam partus et partuum partus quamquam fructus esse non existimantur, quia non temere ancillae eius rei causa comparantur ut pariant, augent tamen hereditatem’, ‘the children of female slaves, and their children’s children, though they are not considered “fruits”, since female slaves are not readily acquired for the purpose of breeding, nonetheless increase an inheritance.’ But the significance of ‘non temere’ (‘not readily’) is somewhat unclear. [[On this text see below, p. 95.]]

³³ Varro, *RR* 2.1.26 (some herdsmen have women even in their summer quarters), 2.10.6–9.

³⁴ Columella 1.8.19: even mothers of three are classified as *feminae fecundiores*... ‘nonnumquam et libertatem dedimus, cum complures natos educassent’ (‘sometimes we have even given them freedom, when they have raised several sons’). The textual state of *Fragmenta de Iure Fisci* 13 (*FIRA* II p. 629) prevents us from knowing what reward this second-century code offered to the ‘ancilla Caesaris quae quinque liberos habuerit’ (‘a female slave of the imperial household who has had five children’).

³⁵ Cf. Alföldy (1972: 124).

³⁶ It is impossible to calculate whether slave-breeding was ever strictly economical (some comparative evidence might suggest that it was not: Fogel and Engerman (1974: 1.155); though both the authors’ definition of breeding and their account of the facts are open to dispute—see esp. Gutman and Sutch (1976: 154–61). The 70 slaves born on a single day on Trimalchio’s Cumae estate (Petronius, *Sat.* 53) cannot properly be cited as evidence of anything except that rich men had hordes of slaves; however, 70 might be a plausible total for the *annual* number of slave births in the *familia* of a really wealthy Roman. According to Duncan-Jones (1974: 50), ‘the agronomists’ comments show that [*vernae* were] a more economical way of acquiring slaves than purchase’, but the passages of Varro and Columella he cites (those cited in nn. 33, 34) show only that it was thought desirable to have *some* home-born slaves.

³⁷ Nepos, *Att.* 13.4.

About the level of fertility among slaves in the provinces there is obviously little definite evidence.³⁸ Even the Egyptian papyri do not give any clear idea about the | average number of children born to slave women, though three or more seems to have been quite exceptional³⁹—this in an economy where slave-born slaves were all the more important because imported ones must have been relatively more expensive than in most other parts of the Empire.

An additional reason for suspecting that the slave population was not very fertile is that in antiquity even free populations sometimes had difficulty in maintaining their numbers. Greece in Polybius' time and most of southern Italy in the late Republic are familiar examples. They might possibly be exceptions, but in fact certain classical practices concerning nutrition, child-birth, and child-rearing make it slightly surprising that populations held up even as well as they did. Above all, the widespread acceptance of child-exposure (see below) in effect permitted the population both to limit the number of children reared and to distort the natural ratio of the sexes against the females who might have given birth to the next generation.

A slave population may admittedly succeed in reproducing itself. Finley cites the United States as an example, where the slave population continued to grow after importation became illegal in 1808 (1820: 1.54 million; 1860: 3.95 million).⁴⁰ The trouble is that the United States was exceptional in this respect; in Brazil and in the Caribbean (both areas which received many more slaves from Africa than North America did), the slave population generally exhibited a natural rate of decrease.⁴¹ In some periods and places the rate of decrease was as fast as 5 per cent per annum.⁴² The causes of this inconsistency between events in the United States and elsewhere are still a matter of debate. Particularly since *Time on the Cross*, one may suspect that the physical conditions of slave life were less severe in the US; but in any case the Roman Empire is more likely to have conformed to the commoner pattern found elsewhere.⁴³ That is

³⁸ Hopkins (1978a: 141) suggests that the Delphic manumission records provide 'hard evidence... on rates of slave reproduction' in that area (and the only such evidence from the classical world). But this would be so only if we discounted the possibility that home-born slaves were more likely, in the period in question, to gain manumission.

³⁹ A slave woman with five children, such as appears in *P.Mich.* V.326, is rare indeed.

⁴⁰ Finley (1985[1973]: 86); but he cites no evidence for the view that 'breeding' has been generally underestimated as a slave source under the Roman Empire. Slave population of the US: Department of Commerce, Bureau of the Census (1918: 53). By 1820 there were already 97 black women in the US to every 100 black males (*ibid.* 147) (but 13.2 per cent of the black population was free).

⁴¹ Cf. Curtin (1969: 28–9); Fogel and Engerman (1974: 1.25–6).

⁴² *Ibid.* 25.

⁴³ I do not pretend to discuss all the factors which complicate a comparison with the Roman world, such as the epidemiological effects of the Atlantic slave trade. For demographic variations in the Americas, cf. Klein and Engerman (1978). On the harshness of Brazilian slave-owners cf. Degler (1971: 70–72).

to say, slave-born slaves alone will have left a deficiency of several hundred thousand a year in the Empire's supply of new slaves.

Other modes of enslavement generally led to sale (not that *vernae* were immune from sale). What was the scale of the total trade in slaves? This we cannot know, but we do possess some evidence—obscure evidence admittedly—about the annual number of slaves purchased by Roman citizens under the principate. Cassius Dio implies, without stating it clearly, that Augustus expected a 2 per cent tax on slave sales, presumably on sales to Roman citizens, to produce enough revenue to pay for the 7,000 *vigiles* of the city and for some other governmental expenses.⁴⁴ The basic pay of a *vigil* is unknown, but on some reasonable assumptions we could conservatively estimate the annual cost of maintaining the force at some 5 million HS.⁴⁵ Even more difficult to determine is the anticipated average price of a slave, since we have very little evidence for the prices of unskilled farm- and household-slaves. If the anticipated average was 1,000 HS, a guess, but in my view not at all likely to be too low a one,⁴⁶ the government probably expected, according to Dio's testimony, that each year there would take place some 250,000 slave sales in the open market where they could be detected and taxed. Since many sales must normally have taken place in private between individuals in such a way that tax evasion would be easy, the total number of slave sales throughout the

⁴⁴ Cassius Dio 55.31 (AD 7): 'needing funds for the wars and for the support of the *vigiles*, he introduced the 2 per cent tax on the sale of slaves, and ordered that the money which was given from the treasury to the praetors in charge of gladiatorial combats should no longer be paid.' The first and the last items cannot of course be measured; but we do learn that the proceeds of the sales tax on slaves could at least make up a sizeable proportion of the cost of the *vigiles*. Two per cent is the correct figure (see Boissvain's *apparatus criticus*), though it has been disputed on the basis of Tacitus, *Ann.* 13.31, which shows that in 57 the tax was 4 per cent, and *ILS* 203, which shows that it had reached this level by 43 (it is possible that Caligula was responsible for the increase; cf. Suetonius, *Cal.* 40).

⁴⁵ Their pay was probably not much, if at all, below that of the legions (900 HS a year for the ordinary soldier): G.R. Watson (1969: 99). The fire-fighting equipment also had to be paid for.

⁴⁶ A long disquisition on slave prices cannot be fitted in here. The most detailed discussions are these of Westermann (1955: 100–101) and Češka (1959: 58–63); but neither author took sufficient account of prices that are likely to have been paid near to the sources of supply or in order to obtain farm-slaves or domestics without special skills. Even so Češka concludes that inferior slaves and children—the latter were of course a major element in the trade—cost $\pm$ 1000 HS. A full discussion would need to consider such evidence as Cicero, *Att.* 5.20.5 (a textually difficult passage, on which see Shackleton Bailey's commentary, 1965–70: 228–9; it implies that the average price fetched by the inhabitants of Pindenissum in Cilicia was as low as HS 240, if we assume (e.g.) that 500 prisoners were sold—and there can hardly have been fewer) (and note too that on Lucullus' campaigns the price of a slave allegedly fell to four drachmas, Appian, *Mithr.* 78), Petronius, *Sat.* 68 (a versatile slave acquired in Italy for HS 1,200), *Vita Aesopi* G (*Aesopica* ed. Perry), p. 44 (where a very unappealing slave such as Aesop changes hands in Roman Samos for 75 *denarii*). Even in Italy, several prices below HS 1,000 are epigraphically attested (see Duncan-Jones 1974: 349). The prices 'paid' in Lucian, *Vit. auct.* are also worth studying. I have not forgotten that by AD 186 the compensation value of a slave in North Africa was HS 2,000 (*CIL* VIII.23956, line 14).

Empire was probably thought to be much larger than this (another reason for doubting that the supply was completely dominated by slave-born slaves).

The original ways of obtaining slaves, in the opinion of Dio Chrysostom, were by capture in war and by brigandage on land or sea.⁴⁷ The enslavement of war-prisoners was the main source from which Rome drew its slaves for most of the middle and late Republic. The market customarily absorbed such slaves in very great numbers, as when Caesar enslaved 53,000 of the Aduatuci in 57. He performed similar feats on several later occasions in Gaul, and the Greek sources simply give up the attempt to count the victims, presenting the total as 'a hundred myriads'.⁴⁸ Under the principate the practice obviously continued, though writers of the period paid relatively little attention to something that was so normal and natural⁴⁹ (there may also have been a tendency for such slaves to end up not in Italy or in other central areas of the Empire, but in distant provinces near their countries of origin). And whatever reservations we may have about the historicity of the narratives on the columns of Trajan and Marcus, the reliefs make it entirely clear that the traditional procedure was maintained.

The relative importance of this source declined severely after the change of external policy which took place in the last years of Augustus' life—nothing less than the ending of the perpetual chain of foreign wars. In practice, what ceased was not so much warfare as warfare-on-an-enormous-scale, and slave prisoners still come on to the market in more than trivial numbers from several regions. In the majority of years down to 117 Roman forces were engaged somewhere, and methods of campaigning were apparently as ferocious as they had ever been. Fighting in Britain, almost continuous down to the withdrawal of Iulius Agricola in 84, recurred spasmodically later on.⁵⁰ Trajan's Dacian Wars must have produced shoals of prisoners,⁵¹ and the suppression of the Jewish revolt of 66–70 produced a total of 97,000 (so Josephus, *BJ* 6.420); many of the latter became imperial property,⁵² as must often have happened. So many were enslaved at the end of Bar-Kochba's revolt in 135—the total must have been far in excess of 100,000—that the victims were sold at the price of a horse.⁵³ This is the only definite instance of over-supply known to me in this period of Roman slavery. But important though these events were, their impact

⁴⁷ 15.25. But he does not 'note the six basic methods of enslavement' (Boese 1973: 92 n. 21, with many others); rather he lists the ways in which slave-owners acquired slaves—hence he mentions purchase, but not child-exposure. There is a similar list in Varro, *RR* 2.10.4.

⁴⁸ *BJ* 2.33 (presumably he gave the figure because it was unusual even for him to receive quite so many on one occasion), Plutarch, *Caes.* 15, Appian, *Celt.* 1.2.

⁴⁹ Cf. Shtaerman and Trofimova (1975: 13–15).

⁵⁰ Frere (1967: 123–66).

⁵¹ Though not the half-million of Lydus, *De mag.* 28.

⁵² *BJ* 6.418; cf. 3.540, Strabo 17.820.

⁵³ *Chronicon Paschale* 1.474 ed. Dindorf (they were sold at Hebron and Gaza).

on the long-term demand for slaves was limited. It is highly unlikely, for example—to revert once more to hypothetical figures—that in the post-Augustan part of our period more than 2–3 per cent (10–15,000) of the annual demand for slaves was met from warfare in an average year.

It is natural to ask whether the need for slaves had any effect on the government's frontier policy. This was after all the only channel of slave supply which the government could broaden by its own decision. Perhaps it did not care; but we should at least admit that we do not fully understand why the conquests of Britain, Mauretania, and Dacia were thought worthwhile. As to smaller-scale border campaigns, such as those sometimes fought against peoples on or beyond the frontiers of the African provinces, slaving may very well have been one of their purposes.⁵⁴

Passing on to other sources, we find one important fact clearly revealed in the literary texts: Roman writers believed that most of the slaves they encountered, apart from *vernae*, derived from the provinces and not from outside the Empire. The great source was Asia Minor, with every region there, except perhaps the most prosperous parts of *provincia Asia* itself, being exploited for this purpose. Texts are numerous: over and over again we hear of the typical slave as a Cappadocian or a Phrygian. As to the general reliability of Roman writers' impressions on this subject, we must obviously be cautious, since clichés were no doubt commoner than careful observations; but on the other hand, *natio* was always an important consideration on the Roman slave market and eventually (we do not know when) the law laid down that a slave on public sale had to display a statement of territorial origin.⁵⁵

Slaves from Italian and provincial sources fell into the following major categories, apart from those who were slaves by birth: foundlings, children sold by their parents, adults sold into slavery by themselves, those enslaved for debt, certain criminals, victims of kidnapping.

The first of these sources was far more important than the others, and provided much more of the supply in this period than has generally been realized.

The exposure of children was very common in many parts of the Roman Empire. 'If it is a boy, rear it; if it is a girl, throw it out'—there cannot be any more striking quotation from the world of the papyri;⁵⁶ and male infants too

⁵⁴ See below, p. 74, for a further indication of the official attitude towards the supply of slaves.

⁵⁵ Ulpian in *Dig.* 21.1.31.21. This may have been a long-standing regulation; *natio* had in any case long been an important consideration (cf. Varro, *LL* 9.93).

⁵⁶ *P.Oxy.* IV.744 (bibliography: Biezuńska-Malowitz 1977: 22 n. 30, [[and see McKechnie 1999]]). Cf. Terence, *Heaut.* 627 for the same advice, given by an Athenian citizen; he complains that if the child has not died, slavery will have been the alternative (640). There is no need here to cite the earlier Greek texts on the subject. Other interesting cases where the exposure of female infants was ordered: Ovid, *Met.* 9.678, Apuleius, *Met.* 10.23. [[See further Harris (1982; 1994).]]

were liable to exposure in Roman Egypt.⁵⁷ The normal fate of these children was death or enslavement (the government heavily penalized those who adopted male foundlings⁵⁸), and they are thought to have been the major source of servile labour in the province, apart from slave-born slaves.⁵⁹ Elsewhere the phenomenon of enslaved foundlings could be so widespread, as it was in Bithynia-Pontus during Pliny's governorship, that it attracted the attention of the provincial governor and even a rescript from the emperor. The same correspondence shows that the matter had previously gained the imperial government's attention on several occasions in the province of Achaëa.⁶⁰ Tarn showed succinctly that child exposure was commonplace in mainland and Aegean Greece in the Hellenistic age, and references continue under Roman power.⁶¹ The most careful discussion of *threptoi*, besides revealing how common they were in Asia Minor and mainland Greece, establishes that the great majority were or had been slaves.⁶² Aelian (*VH* 2.7) considered it remarkable that the Thebans tried to prevent child-exposure; and the effect of the Theban practice was simply to enslave the children who would have been exposed. Plutarch says quite simply 'the poor do not bring up their children'.⁶³ To Strabo it is a remarkable thing about the Egyptians that they rear every child that is born (17.824).

Child exposure was also well-known in some parts, at least, of the non-Greek world. It was evidently quite common in North Africa in the second century AD.⁶⁴ In Britain, 97 infant skeletons outside the large villa at Hambleton in Buckinghamshire provide some material evidence for the practice.⁶⁵

⁵⁷ Biezuńska-Malówist (1977: 22–6).

⁵⁸ *Il Gnomon dell'Idios Logos*, ed. S. Riccobono, sects. 41, 107 (the obscurities in this evidence do not need to be discussed here; [[they were resolved, I think, by Montevocchi (1984).]])

⁵⁹ Biezuńska-Malówist (1977: 42).

⁶⁰ Pliny, *Ep.* 10.65–6 ('magna... et ad totam provinciam pertinens quaestio', 'a major problem... concerning the whole province', 65.1; there was an edict of Augustus referring, impossibly, to a place called 'Anniam', for which 'Andaniam' (Cuntz), the name of a town in Messenia, is often read; Vespasian also wrote on the subject to Sparta, Titus to Sparta and Achaëa, Domitian to Sparta as well as to two proconsuls). Sherwin-White seems to imply (1966: 650) that not all the *threptoi* in question were slaves, but 66 is clear on this point. Trajan's decision (66.2) probably did not help any great number of foundlings to escape slavery, given the difficulties of proving that a child was born free.

⁶¹ Tarn (1952: 100–102). Cf. Longus 4.19, 24, 35, etc. Some Stoics disapproved: Musonius Rufus pp. 77–81 ed. Hense, Epictetus 1.23. On child exposure in the Greek world see also Cameron (1932), Tolles (1941), [[Harris (1994: 4–5). For further bibliography about *threptoi* see Weiss (2009: 193 n. 191).]]

⁶² Nani (1943–44).

⁶³ Plutarch, *De amore prolis* 5 = *Mor.* 497e. On the rather wide social stratum covered by the word *penes* see Finley (1985[1973]: 41).

⁶⁴ Tertullian, *Ad nat.* 1.15, *Apol.* 9, Minucius Felix 31.4; cf. also Lactantius, *Div. Inst.* 6.20.18–26, *C.Th.* 11.27.2, and the inscriptions listed by Westermann (1955: 86 n. 42).

⁶⁵ Cocks (1921: 150) ('the ground... was positively littered with babies'; most were newly born).

In these and other areas, some of those exposed undoubtedly survived to reach the slave market.⁶⁶

As far as Rome and Italy are concerned, the fictitious 'law of Romulus' which required citizens to rear all male children and the firstborn female was probably an expression of late-republican anxiety about the prevalence of child-exposure.⁶⁷ Tacitus thought it noteworthy that the Jews (*Hist.* 5.5) and the Germans (*Germ.* 19) disapproved of exposing children; it was therefore quite normal in the rest of the world he knew.⁶⁸ Other texts show that in Rome even the rich were known to resort to exposure,⁶⁹ and obviously the poor did so still more.⁷⁰ Of all these children a certain proportion—unrecoverable of course—grew up as slaves.

The mechanisms by which an ancient society could arrange for the upbringing of enslaved foundlings are best attested by the papyri, which include a number of nursing contracts and related documents.⁷¹ It would be interesting to investigate how far the collection of exposed infants was the work of those who regularly engaged in the slaving business.⁷² As for numbers, if the poor peasants and townspeople over a substantial part of the Greek world, and in some parts of the west, exposed their unwanted children, it is at least possible that a major part of the slave demand was met from this source.⁷³ The possibility is enough, for no other source within the Empire can have made a major contribution to filling the gap left by slave-born slaves. As we shall shortly see, the other 'internal' sources were minor.

Parents' selling of their own children is a much less widely mentioned practice. According to Philostratus (*V.Ap.* 8.7.12), who implies that this was somewhat extraordinary, the Phrygians do it. We know from Tacitus (*Ann.* 4.72) of a time when the Frisians in Lower Germany were driven by Roman greed into selling their own children. But even among the poorest populations

⁶⁶ For a case in Gaul see Suetonius, *De gramm.* 7.

⁶⁷ See Dionysius of Halicarnassus, *AR* 2.15 (with the comments of Brunt 1971: 149).

⁶⁸ This inference is not invalidated by the fact (for which see Cameron 1932: 113) that barbarians who reared all their children became something of a literary commonplace.

⁶⁹ Musonius Rufus p. 80 ed. Hense (not to speak of special cases such as that described in Suetonius, *Div. Aug.* 65).

⁷⁰ Cf. Pliny, *Paneg.* 62.5.

⁷¹ Biezuńska-Małowist (1977: 24–6). In an interesting article on child-exposure, Glotz argued (1906: 207–8) that few exposed infants can have been collected for enslavement because of the expense of rearing them; but in many parts of the eastern Empire, at least, this was evidently not so.

⁷² I am thinking of such texts as *P.Rein.* II.103, a contract which allowed the owner to substitute another child if the one in the nurse's care died; i.e. he had a regular supply of infants at his disposal. [[For such clauses see Tawfik (1997: 949–50).]]

⁷³ According to Thompson (1953: 11) (cited by Brunt 1971: 154), some primitive peoples have exposed half or even more of the live children born to them; but he does not substantiate this. Frazer believed (1911: 191, 196) that in Polynesia and in parts of East Africa as many as two-thirds of all children were killed.

of the Empire, it seems that once the decision had been made to rear a new-born child, its parents were only likely to sell it into slavery under exceptional circumstances.⁷⁴

Neither the selling of one's own person into slavery, nor enslavement for debt, nor penal slavery can have accounted for a major proportion of the slave supply in this period,⁷⁵ and for that reason they will not be discussed here; at most these sources can have contributed a few thousand slaves a year.

Another source was violence against individuals within the Empire, i.e. kidnapping and piracy. The efforts of Augustus and Tiberius to prevent kidnapping⁷⁶ show that it was continuing to befall even respectable people. It went on being a familiar phenomenon (evidence of Apuleius and Philostratus), and enslavement by piracy certainly did not die out either (evidence of Strabo and Xenophon of Ephesus, among others).⁷⁷ On the other hand, it is unlikely that this source could ever make up a numerically significant proportion of the slave supply except in a period such as the second century BC, when important areas of the Mediterranean were exposed to systematic piracy.

The remaining source is importation across the frontiers. It seems safe to say that it occurred in every large frontier area, but it is of course extremely difficult to estimate the volume of traffic.⁷⁸ Geographical locations beyond the frontiers made less impression, as origins of slaves, than we might have expected. At some periods, admittedly, the trade in slaves across certain frontiers must have been heavy, for example from the upper Danube across the Alps to Aquileia in the period described by Strabo (5.214).⁷⁹ The same writer also mentions (11.493) the slave-trade in the Cimmerian Bosphorus and at the mouth of the River Don, a trade which can be assumed to have

⁷⁴ Alföldy (1972: 125–6) overrates the importance of this source of slaves; no relevant evidence is cited beyond that mentioned in the text. It happened in Asia in Lucullus' time: Plutarch, *Luc.* 20.

⁷⁵ Alföldy (1972: 125) also overrates the importance of self-sale: Marcianus in *Dig.* 1.5.5 does nothing to show that it was common. Petronius may perhaps envisage this as the method by which Hermeros became a slave (*Sat.* 57). Dio Chrysostom 15.23 (tens of thousands *contract* to serve as slaves) is presumably metaphorical, the speaker's purpose being to show that anyone may (in some sense) become a slave; i.e. the reference is to wage-slaves. [[I was wholly mistaken about this matter: see below, p. 104.]] Penal slavery probably did come to make a significant contribution to the labour used in mines (cf. *Dig.* 48.19.2, 19.8.6, 19.36), though for Roman citizens this seems to have become a legal form of enslavement only after Trajan: Donatuti (1934).

⁷⁶ Suetonius, *Div. Aug.* 32, *Tib.* 8.

⁷⁷ Apuleius, *Met.* 7.9, Philostratus, *V.Ap.* 8.7.12, Strabo 11.496 (admittedly concerning the remote Heniochoi), Xenophon of Ephesus 1.13–14. See further Dio Chrysostom 15.25, Lucian, *De merc. cond.* 24.

⁷⁸ See above n. 14.

⁷⁹ For the suggestion that Dacia was a major source of slaves in the period c.65–30 BC, see Crawford (1977a). [[For a discussion of the importation of slaves across the Rhine and Danube, see Lucchelli (1998: 180–83).]]

continued at a later period. Other reliable sources allude to the subject—Tacitus, for example, knows that slaves were traded into the Empire from across the northern Rhine frontier in Domitian's time (*Agr.* 28.3). The *Periplus Maris Erythraei* (13, 31, 36) knows of some places which exported slaves, presumably towards the Roman Empire—but hardly in great numbers.

Turning to the epigraphical evidence, we find that the Zarai tariff of the year 202 lists *mancipia* first among the commodities to be expected, and at this site in Numidia some of the slaves in question must have derived from places outside the frontier (perhaps a difficult distinction to make in this area).⁸⁰ The rate of duty charged, we should note, was lower for slaves than for any of the other major commodities mentioned; this can only have been the result of a decision made at a quite high level of government in order to improve the slave supply.⁸¹ The only other extended list of tariffs we possess comes from Palmyra, the well-known fiscal law of 137, this, however, being a tariff imposed by the city government of Palmyra itself.⁸² First on the list of commodities to be taxed are once again slaves, subdivided into various classes, including apparently children and *veterani*. It is evident, though not explicitly stated, that much of this trade in slaves was not purely local but involved the movement of slaves from Mesopotamia to Syria and probably beyond. |

The fact remains, however, that in the minds of Roman writers as diverse in their geographical backgrounds as Martial, Philostratus, and Lucian, the slave whose nationality is stated is almost always from a Roman province. The inscriptions and the papyri confirm this as much as they can confirm any generalization about slave origins. Slaves acquired by 'peaceful' means from beyond the frontiers were probably not numerous, in relation to the Empire's overall demand for slaves—though at certain points near the Euphrates frontier, at the Bosphorus, and sometimes on the frontiers with Germany alien slaves could arrive in large numbers.

Once the Augustan wars were over and the supply of war-prisoners diminished, a crisis in the slave supply might have been expected. Indeed there may have been shortages and price fluctuations that are unknown to us. Essentially, however, Roman society already possessed the mechanisms which enabled the slave-owners to find an adequate supply. The very range of possible sources is impressive. But crucial was the fact that in addition to the slave-born slaves—which could not in my view come near to meeting the total demand—the

⁸⁰ On the trade routes taxed at Zarai, see Whittaker (1978: 346).

⁸¹ *CIL* VIII.4508. The tariff of 1.5 *denarii* for a slave is the same as that for a horse or mule; of course this may indicate that slave prices in the vicinity were very low.

⁸² *CIS* II.3.1.3913. The regulations about slaves presumably supplemented or differed from the previous regulations, which dated from 68/69 according to Seyrig 1941; [[for the text see Shifman (1980), Matthews (1984: esp. 175–6), Teixidor (1984: 82–4), Healey (2009: 164–205)].

provinces could contribute large numbers of recruits to the slave population, above all in the shape of enslaved foundlings.

It would be rewarding to explore, on another occasion, the long-term effects of this system, above all in those provincial areas where slaves were recruited in the greatest numbers. What, for example, were the likely social effects of child-exposure in those areas of the Roman world where it was most practised? If there came to be a shortage of slaves in the second half of the second century, a possible cause worth discussing is the partial destruction of certain provincial populations. Here, if anywhere, there is a contradiction in the Roman imperial system.

THE GEOGRAPHY OF THE TRADE

Given this great diversity of sources for slaves, the trade in slaves was itself diverse, both geographically and in procedure. In fact the model I am about to describe is probably too simple. But it is desirable to make at least a beginning.

There were four distinct settings, we may suppose, in which slave-sales took place.⁸³

(1) In every town and many villages throughout the Empire slaves were of course sold by owner to owner in small-scale transactions, very often involving single slaves. Even in Egypt, where the slave population was relatively small, you did not have to go to Alexandria to buy a slave: you could buy one in Hermopolis, Arsinoe, Oxyrhynchus, Ptolemais Euergetis, Socnopaïou Nesos, and other such places, as the papyri show. But there are no sales of large batches of slaves in the papyri, and in order to buy or sell a group of slaves, it was presumably necessary to go to Alexandria.

(2) The opportunistic market: after the fall of Pindenissus, there were 120,000 sesterces' worth of slaves 'in tribunali' (Cicero, *Att.* 5.20.5). Behind the Roman army, when it was on campaign, there would normally have been slave-traders prepared to purchase very numerous slaves. Of these some were probably specialists in slave-trading, others *negotiatores* of a more general kind. On occasion, however, it was thought necessary—whether for reasons of security or because of market-conditions—to move the captives to a major trading centre.⁸⁴ |

⁸³ Finley offered a useful distinction between the main slave markets where large numbers regularly changed hands and the activities of itinerant slave traders (Finley 1968: 173).

⁸⁴ On Jewish prisoners taken to Gaza cf. Jerome, *Comm. in Hieremiam* 31.15 (AD 70), *Chronicon Paschale* I.474 ed. Dindorf (135); Ethiopians to Alexandria: Strabo 17.820. Cf. also Volkmann (1961: 108).

(3) The periodic market: small places had fairs. At Tithorea in Phocis the twice-yearly market at the shrine of Isis was an occasion for trading slaves, among other commodities (Pausanias 10.32.15). Slaves must commonly have changed hands at other fairs, though the only specific evidence I know for a close parallel is pre-Roman.⁸⁵ Fairs are, however, a well-attested phenomenon.⁸⁶ Many of the sellers will have been itinerant traders, some but not all specialists in trading slaves.

(4) A much larger-scale trade took place in the few major metropolises of the Empire, and in a number of cities in Italy and on or near the eastern Mediterranean litoral. In some cases there will have been a periodic element about this kind of selling too: at Baetocaece, in Syria, for example, the market was twice monthly.⁸⁷ With this sort of trading, though the sellers will often have been wealthy, they will still not necessarily have been specialists. Not to mention landowners and others, some will have been large-scale merchants, such as Trimalchio was imagined to be. He presumably sold, more or less wholesale, in the great centres such as Rome itself.

To some extent it is possible to detect which cities witnessed this heavy trading. Italy, the north Aegean area, Asia Minor, and Syria will have had more focal points than other regions. But Mauretania, among other provincial areas, also made a serious contribution to the 'international' slave supply of the Empire,⁸⁸ and Alexandria too was evidently an important centre.⁸⁹

What follows is a summary list of the evidence concerning the Italian and eastern Mediterranean markets in which slaves were traded in large numbers during some or all of this period.

The greatest market of all was naturally at Rome, and particularly *ad Castoris*, a suitably central location.⁹⁰ In Italy, Strabo tells us about the importation of slaves across the Alps to Aquileia, and it is very likely that this trade continued to be vigorous in later centuries, even though specific

⁸⁵ IG IX².1. 583 (lines 32–4), concerning the temple of Apollo at Actium; the date of the text is 217–215 BC (Habicht 1957).

⁸⁶ Cf. MacMullen (1970), Gabba (1975), Andreau (1976).

⁸⁷ OGIS 262 (see below n. 119), lines 26–7.

⁸⁸ Mauretania 'vestem et mancipia negotiatur', 'deals in clothing and slaves', *Expositio totius mundi* (Geographi Latini Minores ed. Riese) 60—the only place in the Empire of which the writer says such a thing; no doubt the trade was not new in the fourth century. See also the Oxyrhynchus papyrus published by Oates (1969) (a Mauretanian slave changing hands at Rhodes, AD 238–44) [[P.Oxy. L.3593]]. See also M. Bang (1910: 240) for other references. I do not aim in this section to cite all the possibly relevant epigraphical material (there is scarcely room); an important discussion is to be found in Solin (1977).

⁸⁹ Cf. Biezuńska-Małowist (1977: 40–41), also Xenophon of Ephesus 3.11 and the passages of Strabo and Jerome cited in n. 84.

⁹⁰ Some dealers had *tabernae* there; they bought as well as sold (Seneca, *De const.* 13.4). Oddly, the only other reference seems to be Plautus, *Curc.* 481, which is not explicit. For the specialized homosexual market apparently located in the Saepta, see Martial 9.59.1–6.

evidence is, as far I know, lacking. We have some evidence of slave-trading at Brundisium (Suetonius, *De gramm.* 25), and some for Capua.⁹¹ Trading in slaves must sometimes have been intense at Puteoli, probably the second most important market in Italy; the wax tablets from the Villa of Murecine happen to mention some slave sales there.⁹² At Pompeii, the trading of slaves in the forum is depicted in one of the paintings from the House of Iulia Felix—but the scale of this trade cannot be judged.⁹³

Turning to the Aegean and Propontis areas, the most explicit evidence we have is the following. From Amphipolis comes the well-known Greek epitaph of Aulus Capreilius Timotheus,⁹⁴ the only Greek ever to state explicitly on a surviving tombstone that he was a *somateporos*. One of the reliefs on this quite large memorial shows him leading a line of twelve slaves, including two children—leading them to market, we presume. Twelve is simply the largest number the frame allows. It would be reasonable to suppose that Timotheus practised his trade in Amphipolis and obtained most of his slaves in the upper valley of the River Strymon, since many slaves are known to have come from Thrace.⁹⁵

Byzantium appears in Polybius (4.38.4) as a centre of the slave trade, and being a natural place for the buying and selling of slaves obtained on and off the coasts of the Black Sea it must have continued as such under the principate.⁹⁶ Presumably slaves from such known sources as Bithynia, Pontus, and Paphlagonia were traded both along the coast and in the cities of the Propontis region.⁹⁷

In the Aegean itself, Delos lost its importance after the sack of 69 BC, and that | must have helped other cities to take over the trade. Mitylene was

⁹¹ The Capuan gravestone of M. Publilius M. I. Satyr, illustrated in Rostovtzeff (1957: pl. 12.2) (but not properly explained by him), and in Finley (1968: opposite p. 134), showing the subject engaged in slave-trading (cf. Frederiksen 1959: 115). The inscription is *CIL* X.8222; the date seems to be in the late republic.

⁹² Substantially two sales are in question: a sale of six slaves referred to in documents published by Giordano (1970: 221–2) (cf. Giordano 1971: 191; Bove 1972: 170), and a sale in AD 61 (Giordano 1970: 223–5; cf. Bove 1972: 171–3). [[These and other editions are superseded by in the first case Camodeca (1999: nos. 85 and 87), and in the second Camodeca nos. 90–92.]]

⁹³ Best illustrated in *Le Pitture antiche* (1762: 213). The substantive accuracy of this engraving in most respects is confirmed by a photograph kindly sent to me by Professor Fausto Zevi (Naples inv. 9067). For some bibliography see Schefold (1957: 54). The scene is briefly described and properly identified by Etienne (1966: 223), who however follows Della Corte in identifying another slave market outside the Porta Vesuviana, without good reason.

⁹⁴ J. Roger (1945: 49), with photo (see also Finley 1968: 162–76, with photo opposite p. 134).

⁹⁵ Not to mention numerous pre-Roman instances (Finley 1962: 54), see Plutarch, *Crass.* 8, and especially Galen, *De meth. med.* 1.1 (= X.4 ed. Kühn) (Thracians as typical slaves). Cf. also M. Bang (1910: 226, 237). The fabulist Phaedrus was probably *not* from Thrace (see 3, prol. 17, ed. Perry).

⁹⁶ On this region as a source of slaves cf. Strabo 11.493, 495–6.

⁹⁷ Bithynia: Lucian, *De merc. cond.* 23, Bang (1910: 228, 234), Westermann (1955: 96) (and see also of course Pliny, *Ep.* 10.65–6). Pontus: Philostratus, *V.Ap.* 8.7.12, Athenaeus 1.20c, *SB* VI.9145 (AD 187), *BGU* III.931, line 9 (AD 250). Paphlagonia: Galen, *De meth. med.* 1.1, *P. Mich.* IX.546 (AD 207), *P.Berl.* inv. 7345 (third century; see Biezuńska-Małowist 1977: 35). Cf. also M. Bang (1910: 234).

probably among the inheritors: Martial at least cites it as a characteristic origin for a *mango*: don't send an untrained slave with this book, a Goth or a Sarmatian, 'sed Mitylenaei roseus mangonis ephebus...', 'but a pink ephebe from some Mitylenaeian slave-dealer' (7.80.9). Some of the trade may have come by sea from the north; some surely came from the mainland. It so happens that nearby Pergamum is not attested as a slave-trading city, though it is obvious that there was a regular and heavy trade there; somewhat further inland, however, at Thyatira, the slave-market is known from a dedication which 'hoi tou statariou ergastai kai proxenetai somaton', 'the traders of the slave-market and brokers of chattel-slaves' offered to a benefactor who was a *somatemporos* at some date in the second or early third century.⁹⁸

But the really major sources of Asiatic slaves are slightly to the south and east, Lydia, Caria, Lycia, Phrygia, and Galatia (not to speak yet of Cappadocia). The coastal city which evidently played the greatest role in exporting these slaves beyond the region was Ephesus. By the standards of the murky world of the ancient slave trade, we have several quite good indicators about Ephesus; [[...]]. Varro casually mentions it as a place where a Roman might purchase a slave (*LL* 8.21), a typical place apparently for someone of Varro's class. In AD 42 or 43 'qui in statario negotiantur', i.e. the traders in slaves there, set up an inscription to a Roman *patronus* (about whom more later).⁹⁹ The lives of Aesop tell how when the fabulist was brought down to the coast as a Phrygian slave, most of the slaves in the batch were sold in the slave-market at Ephesus (the three left-overs were taken to Samos);¹⁰⁰ the setting of the story is the early Roman Empire. Another nice detail, possibly relevant, is that the illustrious medical writer Rufus of Ephesus wrote only one work which did not have a strictly medical title; it was called *On the Purchase of Slaves*,¹⁰¹ and presumably gave advice about medical matters to purchasers such as the great slave-dealers of the author's native city.¹⁰²

It is probably to be assumed that all the other major towns in this area, the southern part of the west coast of Asia Minor, were active slaving centres. Besides the evidence for Ephesus, Samos, and Rhodes already cited, we know

⁹⁸ OGIS 524.

⁹⁹ *Forschungen in Ephesos* 3 nos. 25–6 [[= IGSK XVII.7.1.3025; see also IGSK XVII.3.646, with Trümper (2009: 22–3)].

¹⁰⁰ *Aesopica* ed. Perry, pp. 41, 84.

¹⁰¹ Cf. Westermann (1955: 100). Concerning the Arabic sources for this information, see the edition of Daremberg and Ruelle (1879: xxxvii, 470) and Ilberg (1930: 45).

¹⁰² It is also of interest that Ephesus is the only Greek city known to have had a law on child-exposure which was meant to be an effective restraint on the enslavement of free children: an Ephesian father was only supposed to expose a child whose feet had swollen as a result of hunger (Schol. Hes. *Works and Days* 496–7, quoted in Plutarch, *Mor.* vol. 15 [Loeb edition ed. F. Sandbach] p. 165). The period is unknown. The Ephesians perhaps had a particularly vivid idea of what the enslavement of foundlings meant. [[The city had a very old tradition of trading slaves: cf. Herodotus 8.105.]]

from an inscription that there was a *statarion* at Magnesia-on-Maeander, a few miles from Ephesus, in the first century BC.¹⁰³ Nearby Miletus was the home of Aeschines Flavianus, son of Aeschines, a trader in slaves known to have been active in Italy in or shortly before 151.¹⁰⁴

Some of the slaves sold in these cities must have come from Lydia and Caria.¹⁰⁵ Others like Aesop must have come from Phrygia,¹⁰⁶ though it is far from clear how the massive export of slaves from Phrygia was organized. We happen to know that at the town of Acmonia, roughly 250 km from the coast on the main road from Sardis into Phrygia, there was a *statarion* for slave-trading in the first century BC. It was constructed by a Roman citizen, C. Sornatius *Velina tribu*, who 'provided the slave market and altar out of his own funds'.¹⁰⁷ Some 60 km to the south, on the main eastwards road from Ephesus, lay Phrygian Apameia, which is described by Strabo (12.577) as the second trading city of Asia Minor after Ephesus itself. Its role in the slave trade is nowhere explicitly indicated, but Strabo's remark that it was 'the common warehouse for those from Italy and from Greece'¹⁰⁸ should cause one to reflect that this region had only one commodity with which to pay for imports from the west.

It seems probable that many of the slaves exported from Galatia and even | Cappadocia¹⁰⁹ left Asia Minor from the ports of the west coast, but there was also trade through some of the south-coast cities. Isolated sales are attested in sources of different kinds for the Lycian towns of Xanthus and Myra.¹¹⁰ More important probably was Side in Pamphylia, which Strabo (14.664) mentions as a centre of the trade, apparently, however, with reference to the second

¹⁰³ *I. Magn.* 240. [[We know now that there was also a *statarion* at Sardis: see below, p. 106.]]

¹⁰⁴ *FIRA* III no. 134 = *C.P. Lat.* 193. When a man is recorded as having sold even a single slave far away from his home (Aeschines made this sale at Ravenna), it is reasonable to assume that he was involved in the slave-trading business. There is of course no formal proof that Aeschines traded at Miletus.

¹⁰⁵ Slaves from Lydia: Appian, *BC* 2.74, *Vita Aesopi W* (in *Aesopica* ed. Perry) p. 85, Philostratus, *V. Ap.* 8.7.12; Bang (1910: 236). From Caria: Philostratus, *V. Ap.* 3.25; Bang (1910: 236).

¹⁰⁶ There is plentiful evidence for Phrygian slaves (in fact for some writers the Phrygian slave is simply a stock figure): Juvenal 11.147, Appian *BC* 2.74, Galen, *De meth. med.* 1.1, Philostratus *V. Ap.* 8.7.12, Herodian 1.12.3; the papyrus text cited in n. 112; the papyrus text cited as *P. Oxy. inv.* [37] 4 B.109/D (1–2)a by Biezuńska-Małowist (1977: 35) [[still, it seems, unpublished]]; and Bang (1910: 235–6).

¹⁰⁷ *MAMA* VI.260. On Acmonia in general see Robert (1975: 153–60).

¹⁰⁸ This is C. Müller's interpretation, which is preferable to 'the merchandise from both Italy and Greece' (H. L. Jones) (Italian goods at Apameia in considerable quantities would be surprising). The Italians there (for whom cf. Hatzfeld 1919: 167–8) may have been attracted in part by the slave trade (on Apameia as a commercial centre cf. also Dio Chrysostom 35.14).

¹⁰⁹ Galatian slaves: Bang (1910: 235) (and *CIL* II.3944). Cappadocians: Cicero, *Post Red. in Sen.* 14, Horace, *Epist.* 1.6.39, Petronius, *Sat.* 63, 69, Martial 6.77.4, 10.76, Persius 6.77, Juvenal 7.15, *Vita Aesopi* (in *Aesopica* ed. Perry), pp. 43, 84, SHA *Hadr.* 13.7, Athenaeus 1.10c; Bang (1910: 230, 234); etc.

¹¹⁰ See respectively Xenophon of Ephesus 2.10.4 (perhaps not of much significance) and *BGU* III.913 (AD 206).

century BC. The slaves at that time were the victims of piracy, but the trade may well have flourished under the principate too, drawing slaves along the great road that led northwards from Side across the Taurus towards Phrygia, a road which was built or at least begun under Augustus (and was called the *Via Sebaste*).¹¹¹ In a papyrus of AD 151 an Alexandrian is recorded as having bought a slave girl *genei Phrugian* at Side;¹¹² the place could easily have been a major market for the sale of Phrygians.

As for the numerous slaves obtained from Galatia and Cappadocia, it must be admitted that the ports by which they travelled and most of the internal sites for the trade can only be conjectured [[but see n.112]]. Tarsus, for example, is likely to have been an important entrepot, but as far as I know no evidence exists. As for the interior, we should think of attested trading centres such as the temple of the Great Mother at Pessinus in Galatia (see Strabo 12.567; the connection of trade with a major cult centre is of course to be expected), and of those areas of Cappadocia and Pontus where *hierodouloi* abounded, or did so at least in the first century BC. Large numbers of temple slaves were attached to such shrines as those of Ma in Cappadocian Comana and that of Venasian Zeus in Morimene, also in Cappadocia.¹¹³ So too in Pontus with the temple of the *Men* of Pharnaces at Cabeira, the temple of Ma at Comana, and the temple of Anaitis at Zela.¹¹⁴ These slaves were not simply chattel slaves, and the Roman government did not always permit them to be sold,¹¹⁵ but it seems likely that they made a sizeable contribution, by one means or another, to the flow of slaves into the Mediterranean market. Local social structures responded to Roman demand. So too, on one occasion at least, at Tarsus, where in 43/42 'the rulers' attempted to meet Cassius' extortions by selling free persons into slavery (Appian, *BC* 4.64).

In Syria and Judaea the direct evidence for major slave markets in the Roman period is very thin, in spite of the undoubted fact that Syria in particular was one of the great suppliers.¹¹⁶ Tyre, Sidon, Antioch, Aradus, Tripolis, Berytus have left us with little or nothing.¹¹⁷ Slaves were sold at Gaza

¹¹¹ See Levick (1967: 38–40).

¹¹² *BGU* III.887 = *FIRA* III no. 133 (partial text). [[For another sale at Side, in 142, see *P. Turner* 22; the slave was a 10-year-old Galatian.]]

¹¹³ See Strabo 12.535 (more than 6,000, both sexes) and 537 (almost 3,000 slaves).

¹¹⁴ Strabo 12.557, 558, 559.

¹¹⁵ In Pompey's time the chief priest of Ma at Pontic Comana did *not* have the right to sell the temple slaves (Strabo 12.558). On temple slaves in Asia Minor in the Roman period see Kreissig (1977: 379–80).

¹¹⁶ Syrian slaves: Cicero, *Pis.* 1, *De orat.* 2.265, Statius, *Silv.* 1.6.72, Martial 9.2.11 and 22.9, 10.76, Juvenal 1.102, 3.65, 6.351, Suetonius, *Div. Aug.* 83, Appian, *BC* 2.74, Lucian, *De merc. cond.* 10, *Toxaris* 28 (in Egypt); Bang (1910: 232–3), West (1924: 181–2).

¹¹⁷ But see Josephus, *AJ* 14.319–23 (recently enslaved Jews assumed to be at Tyre, Sidon, Antioch, Aradus). *FIRA* III no. 132 is a papyrus text of AD 166 recording the sale of a slave ('puerum, natione Transfluminianum') by one sailor of the imperial fleet to another at Pierian Seleucia. On a sale at Tripolis in AD 252 see *P.Oxy.* XLII.3053. I leave aside here the evidence

after the fall of Jerusalem and at the end of the Jewish rebellion in 135,¹¹⁸ and it may perhaps have been an important slaving centre even in ordinary times. The only other attested slave market in the region, apart from Palmyra, is that of Baetocaece, inland from Aradus (itself probably a place where slaves passed through on their way from Palmyra): a text of Augustan date included in a third-century inscription informs us about a regular market for slaves and other commodities at this site, which was characterized by the great temple of Zeus Baitokaikeus.¹¹⁹

Needless to say, we ought not to oversimplify the geography of the slave trade. Any model we construct has to allow for such known phenomena as a Cretan woman slave being sold by one Roman to another in Dacia,¹²⁰ and for a woman slave in Spain who is said on her tombstone to have had her *domus*, i.e. origin, at Augusta Taurinorum in Northern Italy.¹²¹ A remarkable amount of free migration took place within the Empire, as well as a constant movement of military and government personnel. People took their slaves with them. And slave dealers bought wherever it was profitable and convenient to do so. |

NOTES ON SLAVE-TRADERS

Evidence about traders in slaves is notoriously slight, yet no one has ever troubled to collect it.

The most obvious reason for the shortage of evidence is the reticence which surrounded an occupation that was naturally despised by the elite. Trimalchio could bluntly admit his involvement, but from the conventionally decent point of view it was one of the lowest of all ways of making money. Persius, for example, in the climactic passage of his book, writes:

vende animam lucro, mercare atque excute sollers
omne latus mundi, ne sit praestantior alter
Cappadocas rigida pinguis plausisse catasta,
rem duplica...¹²²

from the pre-Roman period (on Syrian slave exports in the third century BC, see Tscherikower 1937: 16–20), while recognizing that the geographical patterns of the trade are likely to have been slow to change. On Syria as a centre of the slave trade in the Roman period cf. also Urbach (1964: 72, 74).

¹¹⁸ See nn. 53, 84.

¹¹⁹ OGIS 262 = IGLS 4028 = IGRRP III.1020. On the place see J. P. Rey-Coquais in IGLS VII, pp. 54–5.

¹²⁰ FIRA III no. 89.

¹²¹ Eph.Ep. 8 (1899), 524 no. 311.

¹²² 'Sell a life for profit, skilfully purchase and plunder every part of the world, so that nobody beats you at patting sleek Cappadocians on the platform, double your money...' (6.75–8). Cf. Sen. Contr. 1.2.9.

Quite apart from the nature of their merchandise, slave-traders enjoyed a wide reputation for dishonesty.¹²³ According to Paulus, ‘id genus hominum [the *venaliciarii*] ad lucrum potius vel turpiter faciendum pronius est’, ‘this species of person is particularly inclined to making unscrupulous profits’ (*Dig.* 21.1.44.1). And dislike must also have been general outside the elite; hence very few slave-traders admitted to the calling in their epitaphs.

A somewhat less obvious reason why slave-traders are hard to track down is that a good proportion of the selling was done by people who had other occupations or traded in other commodities. This was not just a Roman phenomenon: ‘strictly speaking,’ writes the author of a standard work, ‘there were no “slave merchants” in the Ancient Near East.’¹²⁴ The explanation, he suggests, was the low level of demand. Perhaps so. But in the Roman world Trimalchio, who fictionally carried a mixed cargo, and Sex. Naevius, who combined slave-trading with other business in the real world,¹²⁵ were not faced with this problem. Presumably they simply sought to protect themselves against severe market fluctuations.¹²⁶

Other non-specialists were soldiers. They give some impression of having been very active in this trade, and this would have been a natural result of their frequent proximity to the sources of supply.¹²⁷

The following survey of the evidence could be organized in any of several ways. It might be useful to take first the cases of slave-dealers who are known to have had really superior social connections.

Best connected of all is Augustus’ contemporary Toranius Flaccus, who is mentioned by the elder Pliny, Suetonius, and Macrobius.¹²⁸ He was evidently a leading member of the profession, at least in the sense that he was a man of wealth, since he was apparently on dining terms with the *princeps*. He is reported to have made witty and impertinent remarks both to Augustus and to M. Antonius. The *nomen* is a rare one, but a C. Toranius was a colleague of Octavian’s father, became the boy’s *tutor*—and one of his victims in the proscription of 43.¹²⁹ There was probably some connection, but the slave

¹²³ This scarcely needs documenting, but cf. Plautus, *Curc.* 481, Seneca, *Ep.* 80.9, Pliny, *NH* 7.56, 21.170, Quintilian, *Decl.* 340.

¹²⁴ Mendelsohn (1949: 4).

¹²⁵ Cicero, *Quinct.* 24.

¹²⁶ Fifteenth-century Genoese merchants seem commonly to have included a few slaves with other cargo (Verlinden [1955]1977: 522–4), but the reason for this pattern is not clear.

¹²⁷ Cf. the documents discussed by Biezuńska-Małowist (1977: 32–5).

¹²⁸ Pliny, *NH* 7.56, Suetonius, *Div. Aug.* 69, Macrobius, *Sat.* 2.4.28 (only the last mentions the *cognomen*).

¹²⁹ This did not prevent his being ‘rehabilitated’ later in *ILS* 47. This Toranius was not C. Turranius, praetor in 44 (Broughton 1960: 63), but he probably did reach the praetorship (Valerius Maximus 9.11.5, Orosius 6.18.9). It is very possible that the C. Thoranius, i.e. Toranius, who reached the tribunate though the son of a freedman (Dio 53.27), also had something to do with the slave-dealer.

merchant may of course have been the son of a freedman. In any case what is of most interest, though it has no exact parallels in the surviving evidence, is the social relationship between slave-trader and emperor.

There are other problematical connections with the elite. Was the Roman citizen (not a magistrate) who built the *statarion* at Acmonia (see above) himself a slave-trader? Quite possibly not, but he must have been on close terms with men who were. Some have been tempted to identify him with the Sornatius who is known to have | been one of Lucullus' legates in Pontus,¹³⁰ and the name is unusual enough to suggest a connection of some kind. The man at Acmonia was almost certainly not a freedman, since he belonged to the tribe Velina; more probably he was a relative.

A century or so later the slave-traders of Ephesus, as already mentioned, made a dedication to a Roman magistrate, C. Sallustius Crispus Passienus. How did this extremely wealthy individual, who shortly afterwards held his second consulship (but was not, however, a member of the old aristocracy),¹³¹ come to be the *patronus* of 'qui in statario negotiantur' at Ephesus? We should probably assume common interests of some kind, though the probabilities could only be fully weighed through a renewed study of such *patrocinium* relationships. At any rate, it is clear that the Roman consular saw nothing intolerable in open association with the slave-traders. One wonders whether Passienus would have consented to receive this honour from *mangones* in Rome itself, and the same question is relevant to Sornatius at Acmonia; it may well be that the social rules varied according to one's location.¹³²

The following are the slave-traders I have been able to find in the papyri and inscriptions of this period in the time available for the preparation of this paper:

- at Rome: Sex. Lucanius is the only *mango* identified as such in the sixth volume of *CIL* (VI.34082); Apollodorus, the freedman *venalicius* whose *nomen* is lost in VI.9633 is probably another member of the profession. L. Valerius Zabda is a *mercator venalicius* with a Semitic name in VI.9632 = 33813, the lengthy epitaph of one of his freedmen. Four dedications are preserved in honour of the *genius venalicii*,¹³³ i.e. of the slave market, and presumably all the dedicants were active in the trade, though the inscriptions do not say so: they are P. Acilius Cerdo (VI.396: AD 60), 'C.C. Lappi Mutilus et Rufus et L.L. Rubri Antiochus [Syria again!] et Hymnus' (397: AD

¹³⁰ On whom see Broughton, *MRR* II, 120, 134, 140.

¹³¹ On this man cf. Syme (1958: 328).

¹³² Cf. Humphreys (1978: 154).

¹³³ L. Cesano (in De Ruggiero, *Diz. Ep.* s.v. 'genius', p. 464) was unsure whether *venalicium* in these texts meant a place or the slave market 'in senso astratto'; the former seems more likely.

63), 'Q. Iulius Maximi lib. Felix cum Iulia Q.f. Romana coniuge' (398: AD 86), 'C. Granius Hilarus cum Lissia Sabina' (399: a joint dedication to Iuppiter Optimus Maximus, Dea Suria and the *genius venalicii*). Finally we have the sarcophagus inscribed with the epitaph of one M. Sempronius Nicocrates,¹³⁴ who tells us in Greek doggerel that after working as a musician, 'I became, friends, a merchant of beautiful women', where the word *emporos* seems to imply a slave-dealer rather than a brothel-keeper (which-ever it was, Nicocrates evidently prospered).

- in Italy: the relief on a Capuan tombstone shows that the subject, M. Publilius M. I. Satyr, was a slave-dealer.¹³⁵
- in the western provinces: buried at Cologne, probably in the early first century AD, was the *mango* C. Aiadius P.f. Stel.,¹³⁶ possessor of a *nomen* which would be worth careful investigation. A relief from Arlon, in Belgica, representing a slave-sale and commemorating a freedman of a certain Attilius Regulus,¹³⁷ probably indicates—as in the Capuan instance—that the subject had been a slave-dealer. At the top of the Great St Bernard Pass, at some date in the second half of the second century, a dedication was made by one C. Domitius Carassounus, who describes himself as a Helvetian *mango*.¹³⁸ Not far away to the north, on the route to the Rhineland, was Aventicum, where CIL XIII.11480, recently restored, was a dedication to a patronus 'vena[liciorum corporis Cisalpinorum et] Transalpinorum', that is to say 'of the slave-dealers of the guild of Cisalpine and Transalpine merchants'.¹³⁹ At Nîmes we know of Cn. Naevius Diadumenus, a 'venaliciarius graecarius' (i.e. *gregarius*?) (CIL XII.3349). Finally we should probably take it that the Aurelius Epimachus of Caesarea who sold a slave at Rhodes came from Mauretanian Caesarea, since the slave was Mauretanian.¹⁴⁰
- in Dacia: the sellers in three transactions recorded on wax tablets from Dacia are under strong suspicion of having been professional slave-dealers, since each of them came from outside the province and two at least of the three slaves were also outsiders. Dasio son of Verzo was a Pirustian from

¹³⁴ IG XIV.2000 = IGUR 1326 (L. Moretti dates it to the late third century).

¹³⁵ See above, n. 91.

¹³⁶ CIL XIII.8348 (a well-executed inscription: see the photo published by Klinkenberg 1902). The word *mango*, which follows the name, is not to be taken as a *cognomen* (with Klinkenberg 1902: 85 n. 15) unless a closer parallel can be produced than CIL V.4600 or 4879.

¹³⁷ Laum (1918); also illustrated in Espérandieu (1907–66: 5.226 (no. 4034)). The inscription: CIL XIII.3986.

¹³⁸ ILS 4851 = *Inscr. It.* XI.1.65 (for the date note the *hederae distinguentes* in the photograph published by E. Ferrero, *Not.Sc.* 1892, 68, and *Inscr. It.*).

¹³⁹ See *AE* 1972 no. 352, drawn from Reynolds (1969).

¹⁴⁰ See the *Oxyrhynchus* papyrus cited in n. 88, with Oates's comment (204).

Dalmatia (FIRA III no. 87: AD 139), Bellicus son of Alexander, who sold a Greek boy (no. 88: AD 142), was probably, to judge from his name, another Dalmatian, and Cl. Philetus, who sold a Cretan woman (no. 89: AD 169), was obviously not a Dacian either. Though unfortunately none of these texts gives any explicit indication of the seller's occupation, it is likely that they had themselves imported the slaves they were selling.

- in the eastern provinces: Aulus Capreilius Timotheus of Amphipolis has already been mentioned, and it is worth noticing the respectable status implicitly claimed by his elaborate tombstone with its three panels of reliefs. Aeschines Flavianus of Miletus has also appeared.¹⁴¹ Then there was the *somateporos* of Thyatira: this was Alexander son of Alexander, who was honoured by his colleagues in the slave-market for his conduct as *agoranomos*—a function of evident relevance for the traders in slaves—and for his donations to the city on the festival days of the Augusti (how many other slave-dealers were there among the city officials of Asia Minor?). The L. Iulius Protocetus who sold a Phrygian slave-girl to an Alexandrian in the marketplace of Side (see above) was probably another dealer. So may have been those who are known from other papyri to have sold single slaves who were exported from Asia Minor to Egypt, specifically from Myra in Lycia and from Paphlagonian Pompeiopolis.¹⁴² A rather clearer case is that of M. Aurelius Silvanus, an Osrhoenian who in 251 sold an Osrhoenian girl at Tripolis to a man who afterwards took her to Egypt.¹⁴³ Biezuńska-Malowist registers a number of Egyptians of one kind or another who, though not explicitly stated to be slave-dealers, appear from papyrus texts to have possibly been engaged in the trade in their own province. Perhaps the most interesting of these cases is the Quintus Caecilius Oinogenes who is recorded in BGU IV.1114 (5 BC) as having transported five slaves 'as a gift'; it has plausibly been suggested that he in fact imported these slaves into Egypt by way of trade.¹⁴⁴

I have not collected this evidence only *pel piacere di porli in lista*. Generalizations should be the aim, though any based on this meagre collection are bound to be precarious. It is striking in fact that, in addition to some definite connections with the upper elite (Toranius, Sallustius Crispus), a considerable proportion of attested slave-dealers were Roman citizens, even outside the

¹⁴¹ Aeschines as a slave merchant: Biezuńska-Malowist (1977: 32), and the works cited there.

¹⁴² BGU III.913 (AD 206), *P.Mich.* IX.546 (AD 207). The sellers Malianus and Aurelius Iulianus Maximus, both of Bostra, who are mentioned in *P.Oxy.* XLII.3054 (AD 265), may well have been dealers (see Biezuńska-Malowist 1977: 35).

¹⁴³ *P.Oxy.* XLII.3053; the case is clearer because Silvanus was certainly mobile.

¹⁴⁴ Biezuńska-Malowist (1977: 36–40). On Caecilius see *ibid.* 36 n. 60. For the name cf. *Tesserarum urbis Romae et suburbi plumbeorum sylloge*, Suppl. I (ed. Rostovtzeff) 514b! [[See further Harris (2000).]]

most Romanized provinces. Slave-dealers were not always the pariahs implied in the words of Seneca and the satirists.

It would also help to consider the slave trade from the standpoint of the landowning elite. D'Arms drew a comparison between Roman *negotiatores* and the family Depont of La Rochelle, which during several generations in the eighteenth century rose into the higher ranks of the nobility from a fortune originally based on the slave-trade.¹⁴⁵ There must have been some Roman equivalents, but they are unidentifiable, and they are not the phenomenon I want to attend to in this final segment of my paper. Rather let me emphasize that the wealthy and the aristocratic were themselves not entirely divorced from the realities and practicalities of slave-acquiring, even if some of them liked to think about such matters as little as possible. It is not only the likes of Horace, Martial, and Lucian who give the impression of being familiar with the workings of the slave-market. In *Pro Plancio* 62 Cicero offers | the *iudices* a comparison drawn from slave-buying: 'ut nos in Mancipiiis parandis quamvis frugi hominem si pro fabro aut pro tectore emimus, ferre moleste solemus, si eas artis quas in emendo secuti sumus forte nesciunt, sin autem emimus quem vilicum imposteremus, quern pecori praeficeremus, nihil in eo nisi frugalitatem, laborem, vigilantiam esse curamus, sic populus Romanus deligit magistratus . . .', 'just as in the acquisition of slaves, if we buy a man as a smith or a builder and he turns out not to have the skills we were looking for, we tend to be annoyed however honest he is, but if we buy a man to make him an estate manager or a chief herdsman, the only things we are interested in are his honesty, work-ethic and vigilance, so the Roman people chooses its magistrates . . .'. For some of the upper class there was still in our period experience of war more or less in the republican style, with streams of defeated enemies sent off to servitude. The proprietor of rural and urban dwellings that contained dozens or even hundreds of domestics might be expected to take some interest in the supply and price of slaves. Even more important must have been landownership and the personal concern for their landed estates that was felt by many members of the elite, a concern based on economic necessity and buttressed by the ideology of the thoughtful landowner. The status and the intended audiences of Varro, Columella, and the younger Pliny hardly need to be discussed (even Columella was a man of wealth who took the first steps on the path to senatorial office). Varro's reader is expected to acquire slaves as well as using those born on the estate, and guidance is given about the age and other characteristics to be sought. Columella also addresses the subject, though quite briefly.¹⁴⁶ When Pliny writes to a friend '... credo decentes esse servos qui sunt

¹⁴⁵ D'Arms (1977: 159–60).

¹⁴⁶ Varro, *RR* 1.17–18, Columella 1.9.1–5.

empti mihi ex consilio tuo. Superest ut frugi sint, quod de venalibus melius auribus quam oculis iudicatur', his remarks sound banal and are annoyingly vague.¹⁴⁷ But like many letters in the collection, this one is meant to represent the daily round of a citizen of Pliny's standing—and the man is intensely conscious of his own dignity, a sort of anti-*Trimalchio*. Pliny did not buy these slaves directly but relied on a friend to do some of the work for him (it is not clear exactly how much), a practice commonplace in Roman business though not yet sufficiently investigated by historians. The friend is a certain 'Plinius Paternus', a municipal worthy from Comum rather than a man of senatorial rank. But the dignified consular does take some interest in the inspection of his newly-acquired slaves and does not shrink from advertising the fact.

[[*Addendum*

Secondary matters have been rectified or amplified in the notes. The demographic issues are discussed in the next chapter and its addendum. As to the prevalence of slave labour in particular provinces, Bussi and Foraboschi (2001) showed that there was more chattel slavery in Asia Minor than has been generally allowed. The dossier of slave sales has increased (see Straus 2004 for the texts from Egypt), without changing the known patterns significantly. Some have worried about the economic logic of bringing up provincial foundlings for the slave market in Rome, but it was better to avoid possible *causae libertatis*, and, more importantly, the Ricardian 'comparative advantage' was conferred by the fact that the cost of living was generally lower in the provinces. It cost more to raise slaves in Italy. For the applicability of Ricardo's trade theory to classical antiquity see Bresson (2008: 2.140–43). On slave-traders see further Bodel (2005). Bosworth (2002) argued that senators were more involved in the slave trade than I allowed in this paper, citing Suetonius, *Vesp.* 4, who says of senator Vespasian that in about 62 'he of necessity descended to *mangonicos quaestus*, slave-dealing profits, to keep up his senatorial status' (even Syme had misunderstood this text)—although, says Bosworth, 'we need not assume that he actually did the buying and selling' as distinct from financing the activities of others. Bosworth's understanding of the Suetonius passage is obviously right, but he takes insufficient account of Vespasian's reputation for avarice (Suet. 16, 23).

For the vexed question whether slave-markets (*stataria*) have been identified archaeologically see Coarelli (2005), Trümper (2009).]]

¹⁴⁷ 'I believe that the slaves bought for me on your advice look all right. It remains to be seen whether they are honest, which when you are buying slaves is easier to find out by listening than by looking', Pliny, *Ep.* 1.21.2; cf. 3.19.7.

Demography, Geography, and the Sources of Roman Slaves*

(1999)

INTRODUCTION

Where did a large-scale Roman slave-owner obtain new slaves? Varro in effect tells us: Ephesus.¹ And the answer would probably have been the same for many generations after his time. But can we work out more systematically and more thoroughly the relative importance of different *kinds* of sources? The sources which most require consideration are: (1) children born to slave-mothers within the Empire; (2) persons enslaved in provincial or frontier wars; (3) persons imported across the frontiers; (4) the 'self-enslaved'; and (5) infants abandoned at places within the Empire.

Several years ago, I argued on a number of grounds that the last of these sources, child-exposure, was more important than had previously been recognized.² Subsequent reconsideration of the problem has led me to suspect that the source-material underrepresents the amount of slave-importation across the frontiers, but not to doubt that child-exposure was very widespread or that it made an important contribution to the slave supply. Of the many subsequent discussions, the most original is that of Ramin and Veyne, who, in an article of 1981 too little attended to in the Anglo-Saxon world, made it

* I thank the Editorial Committee [[of the *JRS*]] for its efficiency as well as for its scholarly reactions to a first draft. My thanks also to Walter Scheidel for courteously sending me his 1997 paper in advance of publication, to the economist Michael Haines for his help with the demography of US slavery in the nineteenth century, and to many friends, especially Richard Duncan-Jones, Keith Hopkins, Elio Lo Cascio and Brent Shaw for discussion. [[For further argumentation, persuasive and otherwise, see Lo Cascio (2002), Bradley (2004), Scheidel (2005).]]

¹ *De lingua Latina* 8.21.

² Harris (1980a) [[see the previous chapter]]. Ramin and Veyne (1981: 47) were less cautious: abandoned children 'sont surement la source principale des esclaves sous l'Empire'.

appear very likely that those who voluntarily sold themselves into slavery were a larger category than scholars usually imagine.³

More recently, Scheidel has attempted to revive the case, previously propounded by Shtaerman among others, in favour of the self-reproductivity of the slave population.⁴ Indeed, he takes that case to extremes, claiming that after the abrupt deceleration of Rome's frontier wars which took place in the first two decades AD, the fertility of the existing slave population itself was by far the most important source of slaves. It was 'at least five or six times as important as any other single source', and he is courageous enough to suggest a number for the percentage of slaves he thinks came from this source, a number which seems to be about 80 per cent. I shall call this opinion the SRH (self-replacement hypothesis).

Now, I have never denied that a large number of Roman slaves were the children of slave-mothers, nor did I in my paper on the slave trade write, as Scheidel alleges, that foundlings supplied more than half of the new slaves in this period.⁵ I consider that to be possible, but there is not enough evidence, in my opinion, to estimate the contribution from this source at all precisely. For the time being at least, as most scholars would probably agree, we can only fix the importance of sources (1), (3), (4), and (5) within rather broad bands of possibility. But Scheidel's position is extreme and implausible. He fails to make the high estimate of slave fertility which corresponds to his 80 per cent estimate into a credible hypothesis, neglecting to take into account the reasons why the fertility of the slave population is likely to have been too low, including the powerful evidence (as it seems to me) which suggests that the sex ratio of the slave population was over a long period seriously unbalanced, with females in the minority. He underestimates the contribution from other sources, and comes to a fallacious conclusion concerning enslaved foundlings.

In 1980 it was mildly novel to correlate the problem of the slave supply with what little was known about the demography of the Roman Empire.⁶ Whether what we have learned on the latter subject since that date—and, in the eyes of some, what we have learned has been mainly the depth of our ignorance—has much bearing on the problem of the slave supply is one of the questions which this article confronts.

³ Ibid.

⁴ Scheidel (1997); Shtaerman (1969: 70); Shtaerman and Trofimova (1975: esp. 17, 24). Her conclusion is more moderate and credible than Scheidel's.

⁵ Scheidel (1997: 165). I wrote (1980a: 123) that the enslavement of abandoned children was 'a far more important source' of slaves than any other Italian or provincial source apart from those who were slaves by birth. The paper of Ramin and Veyne makes me doubt whether I should have written 'far'. I have never by the way, *pace* Scheidel (156 n. 2), used the odd expression 'social life expectancy'.

⁶ But see Hopkins (1978a: 141). It is also worth consulting the remarks of Henri Wallon on this matter, written in the 1840s without the benefit of *CIL* or life-tables: Wallon (1879: 1.158 and 2.101–4).

The survival rate of foundlings is another question requiring attention.⁷ Nor will it be possible to skirt entirely the possible implications of Riddle's books on contraception and abortion.⁸ If Riddle were broadly correct, and effective herbal methods of contraception and of inducing abortion were in widespread use in antiquity, our problem would become even more difficult, since it would be harder to believe in population 'surpluses' in the free population of the Roman Empire, and harder also perhaps to attribute a high level of fertility to Roman slaves. At all events, the purpose of this paper is not simply to reassert an earlier account, but to take stock of an undeniably delicate historical problem.

Ancient historians must imperatively learn from anthropology, economics, and demography, as has been obvious for a generation, indeed for two or three.⁹ It is not a matter of riding the wave of the future—historical studies have now notoriously turned away, to a great extent, from social history in its traditional forms—but of using the techniques which may help us to learn something interesting. One of the osmotic effects of the social sciences on ancient history has been a pronounced affection for the language of 'models'. Almost all of us have used this language, and a distinguished practitioner of the ancient-historical art has with persuasive words made its use a litmus-test of intellectually vigorous ancient history.¹⁰ But, to change the metaphor, too much of this heady liqueur is not good for you. Scheidel follows the fashion, and his paper neatly displays the unnoticed risk which 'model' terminology brings with it.

The *OED* somewhat optimistically asserts that a model, in this sense, is 'a simplified or idealized description or conception of a particular system, situation or process... that is put forward as a basis for calculations, predictions, or further investigation'.¹¹ In truth, there are two different senses of the word alluded to in this definition, one exemplified in the concept 'model life-table', tightly connected to empirical observations (though distinct from them)

⁷ Cf. Harris (1994: 8–11). Only in classical fields, perhaps, would a degree of tension between what one wrote in 1980 and in 1994 be thought troubling.

⁸ Riddle (1992; 1997). But according to Frier (1994) there was little family limitation within marriage outside the upper class. [[I did not in fact address this problem in the course of the present article. See the Addendum.]]

⁹ Which is not to suggest that all ancient historians must follow this path, or that such study is a vaccine against bad social history. And the question always remains—which economics, which anthropology? As for the present problem, Scheidel is in error in asserting that its difficulties derive solely from 'lack of demographic conceptualization' (p. 156)—they also derive from among other things poor evidence, poor interpretation of the evidence, and poor weighing of historical probability.

¹⁰ Hopkins (2002[1995–96]: 41). Contrast Bagnall and Frier (1994: xvi–xvii).

¹¹ 1989 edition, s.v. *model* I.2.e. Cf. the definition from Chorley and Haggett (1968: 22), quoted by Finley (1985: 60). This definition stresses simplicity more, and hence covers the second sense mentioned above better than the first.

and multiple (Coale and Demeny offered eight different sets of models),¹² and the kind of model which is likely to stand on its own or be juxtaposed to a single alternative, and hence invites acceptance or rejection rather than modification. |

The latter kind of model can be 'good to think with'. The 'consumer city' may not have turned out to be an appropriate model for the cities of the Roman Empire, but at least it stirred some discussion of a topic which many of us thought worth talking about. But such models can rather easily become straitjackets. What is unproductive is the model as a substitute for refining a historical description or hypothesis. Some historical problems do admittedly invite the choice of Model A or B (or C or D—but all too often we content ourselves with dichotomies), there being fundamental disagreement about how to approach the topic and about what is admissible evidence. Other historical problems are matters of degree, matters of adjustment, and the prize—or rather the baton—goes to the historian who can offer the account which is most precise or convincing or stimulating (tastes vary). In such cases the simplification inherent in model construction can be quite harmful.¹³

But to return to the particular case: the first matter to be discussed is the fertility of the Roman slave population. Then we must reconsider the contributions to the slave supply made by the other sources, and then comment briefly on the geography of the slave trade, which is in itself enough to render the SRH very improbable. We shall also glance at the controversial matter of economic integration.

THE FERTILITY OF THE SLAVE POPULATION

One can understand why no one has recently reviewed the evidence about absolute slave numbers in the Roman Empire: not only is the evidence hopelessly inadequate for any but a very approximate conclusion, but the problem of the free population, which one might expect to be easier to resolve, is once again warmly disputed territory.¹⁴ The present significance of the question of absolute slave numbers, apart from one's general wish to know how many people we are talking about, is that the more slaves there were, the more difficult it is to identify sufficient sources other than children born to

¹² Coale and Demeny (1983).

¹³ Finley (1985: 61) contrasted model construction with the meaningless accumulation of facts in books about ancient cities, and that is probably a case in which model-construction can help, partly because the evidence is so unmanageable, as it is not, for example, in the case of the sources of Roman slaves. But Finley's dichotomy was itself seriously misleading.

¹⁴ See e.g. Lo Cascio (1994), Scheidel (1996a: 167–8). Coarelli has argued for a population of the city of Rome as high as 1.2 million in early imperial times (Coarelli 1997: 107).

slave-mothers within the Empire; or rather, the higher the ratio of slaves to free inhabitants, the harder it is to identify such sources. But that does not mean that we should necessarily prefer a low estimate of the slave population: the question is which hypothetical numbers are more unacceptable, a low number for the slave population¹⁵ or high numbers for all or some of the principal slave-producing sources.

It is disappointing, however, that recent works on both Roman slavery and Roman demography have avoided discussing or drawing conclusions about the size of the slave population.¹⁶ Scheidel has the real merit of facing the question. He says 'six million in a population of sixty million' (p. 158), on the eve of the Antonine plague, but without much in the way of justification. We are offered a second-hand guess about Italy—two to three million slaves—and for the rest of the provinces an extrapolation from Egypt, where, it has been agreed for some time, the likely proportion of slaves in the *chora* was about 10 per cent (at Alexandria things may have been different).¹⁷ The only city in the Eastern provinces where we have any information is Pergamum, where Galen, in a not fully lucid passage, seems to tell us that slaves amounted to about a quarter of the total population.¹⁸

While we no longer suppose that Egypt was an exception to every generalization that can be made about the economy and society of the Roman Empire, it seems reasonably obvious that it will have had a lower ratio of slaves than almost any other province. On large rural estates in Egypt, as Rathbone has shown in a single but scarcely unrepresentative case,¹⁹ slave labour was sparse, which cannot have been the case in any Western province, and is most unlikely to have been the case in the highly Hellenized provinces. Wealthy Romans, including those of provincial origin, bought land and other assets in

¹⁵ I see the high ratio of slaves as having gradually taken hold in Italy over the course of the middle Republic; the addition of new provinces will have had varying effects on the overall ratio.

¹⁶ Thus nothing on this in Shterman et al. (1987), Marinovich et al. (1992), Parkin (1992), Herrmann-Otto (1993), or Bradley (1994).

¹⁷ See esp. Biezuńska-Małowist (1977: 156–8); cf. (1988: 264).

¹⁸ In *De propriorum animi cuiuslibet affectuum dignotione* 9.13 (p. 33 De Boer = 5 p. 49 Kühn), Galen lets it drop that the number of slaves was the same as the number of male citizens and as the number of women (citizens), namely 40,000. (See Mitchell 1993: 2.244 for the view that these numbers referred to the city itself without its *chora*.) The absolute value of this figure is slight (cf. Scheidel 1996b on the Graeco-Roman passion for the numbers 400, 40,000, 400,000), but the proportions may be roughly right. If the free population was 3.5 times that of the male citizens (Duncan-Jones 1974: 264 n.4), that would mean that slaves made up 22.2 per cent of the total, but it seems unlikely that Galen intended to include very young slave children (since he is discussing the financial assets of the three groups); hence the proportion was probably higher than 22.2 per cent. Parkin (1992: 175 n. 187) prefers a multiplier of 4, not 3.5, but Caesar, *BG* 1.29 does not in fact support this: the men who could bear arms (among the Helvetii) must have been a smaller set than the adult males. Those who believe in low estimates for the slave population regularly belittle Galen's information.

¹⁹ Rathbone (1991: 89–91, 106–7).

many provinces, and often had a strong incentive to change the labour system. An exhaustive discussion of the results would have to consider the extent of quasi-capitalistic agriculture in each province, and should also consider the extent of the urban *familiae* of local bigwigs and senators.²⁰ We might attempt a triage of provinces, differentiating those which had a ratio of slaves near to that of Italy, those which like Asia cannot possibly have had a ratio as low as 10 per cent, and those which resembled Egypt. In any case 10 per cent is far too low an overall ratio for the extra-Italian empire as a whole. My earlier guess that the actual figure fell within the range 16.6 to 20 per cent still seems to me about as close as we can get.

The Scheidel model, or SRH, contends that the slave population produced a large proportion of its own replacements, 80 per cent of them according to Scheidel's conjecture. This might be considered implausible even if the slave population had a natural sex-ratio, since it seems generally to be true that high fertility and tolerably low child mortality depend on the existence of family structures.²¹ In the Roman world, large numbers of female slaves of child-bearing age must have had irregular sexual lives, and for every *ancilla* who was made pregnant in a fleeting encounter there must have been another whose wish to find a tolerable love-life was frustrated by her owner or the owner's agent. More slave-women than free women nursed their own babies, with the consequence that they lactated longer and had longer intervals between pregnancies. Nor should we brush aside the fact that in significant portions of the Roman Empire, the offspring of slave-women were not deemed to be slaves if the father was free.²² The children of slaves could also suffer exposure (hence there was some overlap between source (1) and source (5)).²³ And in my view the sex-ratio of the slave population was in any case far from the natural one: it was very high, that is to say that males far outnumbered females,²⁴ with very negative consequences for slave fertility.

An isolated ancient text appears to suggest that Roman slaves were at one time not less but more fertile than free people: Appian attributes to Ti. Gracchus the assertion that the supposed infertility of the free Italians was matched by the *polupaidia* of the | slaves.²⁵ Opinions will continue to differ as

²⁰ See further Harris (1993b: 25–7 [[below, pp. 307–8]]).

²¹ See e.g. Higman (1973: 527) (repr. in Beckles and Shepherd 1991: 250).

²² Ramin and Veyne (1981: 481). See for instance Dio Chrys. 15.3–5.

²³ Harris (1994: 14).

²⁴ Idem (1980a: 119–20) [[above, pp. 63–4]]; and see below, p. 98. [[See further Lo Cascio 2002: 58–9, on this unbalanced sex-ratio.]]

²⁵ BC 1.7.29, an assertion rejected by Gabba (1958: 17–18). Herrmann-Otto, who discusses this passage without coming to any firm conclusion, errs in implying (1993: 234 n. 6) that the scholars she lists, including me, have gone so far as to suppose that there was no natural reproduction of slaves 'worth mentioning' under the Republic, which would be a bizarre position.

to whether the notion goes back to the 130s BC or whether it was a later embellishment. Given the relatively high quality of Appian's information about the era between 133 and 70, a genuine comment by Ti. Gracchus or at least an invention of that period may have been involved. If so, the allusion may have been pure rhetoric, aimed at discrediting wealthy latifundists; or it may have had some basis in Gracchus' observations, in which case he may have been thinking of the consequences of the great acts of civilian enslavement which took place during the imperial expansion of the mid-second century BC, in Spain, Greece, and North Africa, which had few parallels (there were some of course) in post-Augustan times.²⁶

Nor does Varro really encourage us to believe in a high level of slave fertility.²⁷ He shows no interest in slaves having children except when they are *pastores*, who have a quite exceptionally responsible job. Columella, on the other hand, as is well known, favoured the fertility of slave-women on country estates, and that may well be a symptom of the changed conditions of imperial times. He is not likely to have been eccentric in this respect, but his system of rewards is represented as his own idiosyncrasy.²⁸ To have a large demographic effect, slave-owners would have had to mobilize a widespread system of serious rewards, an unproven though not an impossible hypothesis. In any case, neither these texts nor any others lend support to the suggestion that large slave-owners also effectively encouraged fertility in their urban households.²⁹

Slave-owners' attitudes towards their victims' fertility have to be given their proper context, which is the general problem of slave management. This required a mixture of rewards and severity—but mainly, in Roman eyes, severity. Xenophon was probably expressing a common slave-owner's attitude when he made his hero Ischomachus say that 'good slaves generally become more loyal when they have had children, but when the bad ones form sexual relationships they become more resourceful about misbehaving' (ἐὺπορώτεροι πρὸς τὸ κακουργεῖν γίγνονται: *Oec.* 9.5); Xenophon represented Ischomachus as preventing slaves from having children without his

²⁶ It could be argued that Appian's comment is better evidence if it is *not* authentically republican; but it is in any case a slender reed.

²⁷ Varro, *RR* 2.10.6, and Columella 1.8.19 are invoked by Scheidel (1997: 169).

²⁸ 'Nos quidem . . . feminis quoque fecundioribus, quarum in subole certus numerus honorari debet, otium nonnumquam et libertatem dedimus, cum complures natos educassent. Nam cui tres erant filii vacatio, cui plures libertas quoque contingebat' ('We . . . have sometimes given relatively fertile women, who deserve to be honoured for a certain number of offspring, time off work and freedom, when they have reared several sons. Those who had three sons [or children?] got free time, those who had more gained freedom too'). Cf. Parkin (1992: 122). Such a rule must have put female infants at risk. On the desirability and affordability of *vernae*, see Harris (1980a: 118–19, 120) [[above, pp. 63, 66]].

²⁹ [[Concerning *Fragmenta de iure fisci* 13 (*FIRA* ed. Riccobono II, 629) see above, p. 66, n. 34, and the addendum to this chapter]].

permission. This would have made good sense to Romans too.³⁰ As for acquiring slave women with the intention of profiting from their fertility, it seems to have been rare.³¹

The validity of Scheidel's theory depends on a high level of slave fertility, and it is therefore surprising to see the matter exiled to a footnote and an appendix. We are offered the familiar observation that the influx of slaves into a slave system may affect its fertility. 'One might therefore wonder', the argument goes on,³² |

to what extent the slave populations of the Caribbean and Latin America which were shaped by continuous selective import and failed fully to reproduce themselves were intrinsically more 'typical' than the self-contained and highly reproductive slave population of the United States.

But the issue is not the demographic 'typicality' of these populations, rather their demographic similarity to the Roman slave population. It so happens that US slavery between 1808 and 1865 was in fact atypical, since it was an almost closed system, whereas in most slave systems there are accretions to the slave population from outside. It may also have been atypical in another respect: during the explosive growth of US cotton production after Whitney's invention of the cotton gin in 1793, the prevailing preference of the slave-owning cotton producers in the Carolinas and Georgia was for female slaves, 'since it was supposed that the sensitive harvesting of cotton demanded female labor'.³³ On the other hand, the occupations for which Roman slave-owners preferred female slaves—and they thought in terms of occupations³⁴—were strikingly few (see below).

The Roman system resembled 'open' western-hemisphere systems into which new slaves were imported, in that the sex-ratio of the total slave

³⁰ Cicero translated this book in his youth (*De off.* 2.87), and the translation was widely read; see Pomeroy's commentary (1994: 70). She is mistaken, however, in saying (p. 299) that for Xenophon slaves 'born at home' are the only acceptable ones: as far as I can see, he nowhere implies any such opinion, nor does *Oec.* 7.34 provide any evidence that, even in Xenophon's imagination, 'Ischomachus' slaves evidently do more than reproduce their numbers'.

³¹ With respect to pre-Severan times, this rests on an argument from silence and probability. Then there is the comment of Ulpian in *Dig.* 5.3.27 pr.: 'quia non temere ancillae eius rei causa comparantur ut pariant', 'since slave-women are not commonly acquired so that they may produce children'; for the sense of *non temere* cf. Suetonius, *De gramm.* 4.5, Gellius 20.5.4, and *OLD* sense 3. It used to be debated, not unreasonably, whether *non temere* was interpolated: De Martino (1980: 265–6). (T. Kinsey in A. Watson 1985 erroneously translates 'slave girls are not acquired solely as breeding stock'.) There is no contradiction between Ulpian's words and *Dig.* 21.1.14.1 (Ulpian again) or 19.1.21.pr. (Paulus), texts which confirm the obvious fact that when women slaves were purchased the purchasers were sometimes (as they must normally have been) interested in their ability to bear children.

³² Scheidel (1997: 157 n. 14).

³³ Thomas (1997: 572). But other historians such as H. S. Klein dismiss this claim (personal communication).

³⁴ See Tacitus, *Germ.* 25.

population was liable to severe distortion. As is well known, the eighteenth- and nineteenth-century Atlantic slave trade commonly carried far more adult males than adult females. The orthodoxy used to be that differential demand was the cause of this; the more recent orthodoxy is that the determining factors were at least in part to be found in the source regions,³⁵ but since no one, so far, has been able to give an altogether persuasive account of what those factors were, it is not the moment to be dogmatic about this matter.³⁶ In any case the Roman evidence, spotty though it is, supports the notion that demand was stronger for male slaves than for female ones.³⁷

No one has ever doubted that a closed slave population *can* have a positive net reproduction rate (NRR),³⁸ or that it *can* experience long-term natural increase; the nineteenth-century American case settles that. The question is whether the Roman slave system was more similar to the nineteenth-century American one, and to the few other known instances of self-reproducing slave populations, or to the systems which predominated in the Caribbean and elsewhere in the western hemisphere, which were demographically very different. I contend that to assimilate the Roman system to any relatively mild system is a serious error of historical perspective. Scheidel has forgotten the *servi vincti*.

Working out why some nineteenth-century slave populations were better than others at reproducing themselves is a complex matter. Two-parent families almost certainly helped,³⁹ and that factor alone is powerful evidence that the Roman slave population did not reproduce itself. But there is much more to say about differences in the living conditions of slaves between the Roman Empire, the Caribbean, and the United States—and a whole host of other slave systems. In an era which has been reawakened to the life-conditions of slaves in the latter milieu by such books as Toni Morrison's *Beloved*, any attempt to argue that one slave regime was worse than another may seem distasteful. On the other hand there is a long and tiresome tradition among classicists of softening the realities of the Roman slave system. A good antidote

³⁵ See e.g. Eltis and Engerman (1993: 308–23), who say that the sex-imbalance is normal for a migrating population. For an interesting attempt to combine factors in the source regions with differential demand, see Olwell (1998: 28 n. 44). See also Klein (1999).

³⁶ Cf. Eltis and Richardson (1997: 32–3).

³⁷ Cf. Harris (1980a: 119–20) [[above, pp. 68–9]].

³⁸ That is, 'the number of daughters that a cohort of newborn girl babies will bear during their lifetime assuming a fixed schedule of age-specific fertility rates and a fixed set of mortality rates', Shryock et al. (1976: 315) [[and (2004: 431). The gross reproduction rate (GRR) takes no account of maternal mortality, hence it is much higher in a pre-modern society than the NRR; cf. Parkin (1992: 87)]]].

³⁹ Scheidel (1997: 169, end) is wrong to imply that we know such families to have been common among Roman slaves, and also mistaken in implying that Bagnall and Frier (1994) lend support to this view (see pp. 156–9 for their most pertinent comments). See below for the argument that the sex-ratio detectable in the census-returns from the Egyptian *chora* (more female slaves than male) reverses the pattern prevailing in the Roman Empire as a whole.

is to read any account of the way the ancients tortured slaves for legal testimony. More to the point is that in the extremely unpleasant world of Caribbean slavery in the eighteenth century, which was characterized by under-nourishment and corporal punishment, all sorts of measures were nevertheless taken for the physical wellbeing of the slaves which would have been unthinkable in the Roman Empire. There can be no doubt that conditions in many places in the West Indies were severe enough to have a major negative effect on fertility. But there were sometimes slave codes aimed at limiting the exploitation of slave labour, in Trinidad for example in 1789 and 1800.⁴⁰ There were quite often more or less scientifically-minded doctors (sometimes getting rich quickly, if they survived).⁴¹ As early as the 1640s, Curaçao had two hospitals for slaves, 'aimed at enhancing the exchange value of the slaves', and later in the century there was a doctor there charged with treating slaves.⁴² Much of this medicine did more harm than good,⁴³ but of course that became less true as the nineteenth century progressed; and we can presume that the motives which led slave-owners to pay for such medical care also actuated them to take thought for the slaves' nutrition and shelter. The medical care applied to slaves in the antebellum US was extensive,⁴⁴ and once again important for what it suggests about the general treatment of slaves. Now, the contrast with the classical world is not total, and we cannot suppose that the slave infirmaries, *valetudinaria*, mentioned by Columella (11.1.18, 12.3.7, and 8) were unique—he sees no need to explain them to his readers. But it would probably be right to suppose that Roman attitudes towards the health of slaves were generally harder than those of Caribbean and North American slave-owners.⁴⁵

There is a real contrast to be drawn between Roman and antebellum US slavery with respect to the crucial matter of family life. It hardly seems necessary here to parade the evidence that only a very small proportion of Roman slaves lived in families of their own (which was plainly the reason why freedmen, according to the evidence of their funerary monuments, exulted in family life),⁴⁶ but it may be worth pointing out that North American slaves in the nineteenth century, the self-reproducing slave population *par excellence*, normally lived in family dwellings and in long-term

⁴⁰ For details see John (1988).

⁴¹ See e.g. Craton (1976: 237–55); Sheridan (1985).

⁴² Lamur (1981), cited from Beckles and Shepherd (1991: 216).

⁴³ For some of the fatal remedies favoured by doctors during the Atlantic journey, see Kiple and Higgins (1992: 321–37, esp. 327).

⁴⁴ See most recently Bankole (1998).

⁴⁵ There were ephemeral official attempts in the second century AD to protect slaves from certain extremes of punishment and overwork; cf. Garnsey (1996: 93–7).

⁴⁶ Shaw (1991: 87), making use of the work of P. Zanker and D. E. E. Kleiner. *Some* slaves did of course live within stable family structures.

relationships. In this respect, *Time on the Cross* was hardly misleading.⁴⁷ We hardly know enough to be sure that Roman slave-owners, when they came to sell slaves, took less notice of such family ties between slaves as did exist than American owners did, but their ruthlessness in this respect has struck at least one investigator.⁴⁸ |

Another extremely important factor affecting the ability of the Roman slave population to reproduce itself, perhaps the most important factor of all, was that population's sex-ratio.⁴⁹ The Egyptian census evidence tells us that, in the very small sample of the non-Alexandrian population in question (N = 102), the ratio of male slaves to female was 1:2 (in conventional terms, the sex-ratio was therefore 50.0). The most recent commentators observe, however, that while there may have been many more female than male slaves in Egypt (better: Egypt outside Alexandria),⁵⁰ the census returns may exaggerate the female preponderance, 'since it appears that male slaves were typically manumitted earlier than females'.⁵¹ The same scholars also remark that there is no sign in these documents that the slave-masters pursued a policy of encouraging slave families.⁵² But the sex-ratio which obtained in Egyptian towns and villages has very little bearing on Alexandria or on the provinces where agricultural slavery was common.

All the evidence, and all the acceptable arguments, about the sex-ratio of the slave population in the big cities and in the provinces where slaves represented a sizeable proportion of the rural and the workshop labour-force point to a heavy imbalance in the other direction, i.e. far more males than females. The same obviously applies in places where mines and quarries and related economic activities were important. In domestic service, male slaves seem to have outnumbered female to a possibly surprising degree.⁵³ One could never, I think, have said about the Roman Empire, as has been said about the British Caribbean in the early nineteenth century, that 'the towns always had low slave sex ratios [i.e. a low proportion of males to females] because of the demand for females in domestic employment'.⁵⁴

A lengthy case could be made for the proposition that the slave population of the Empire as a whole was disproportionately male. One might start with urban *familiae*, since it is not inconceivable *a priori* that, there at least, the pattern was different, especially in the Greek world. The epigraphical evidence admittedly requires much more cautious handling than it received twenty

⁴⁷ Fogel and Engerman (1974: 126–44). The classic treatment, also much discussed, is Gutman (1976: chs 2–4); see too Kolchin (1993: 138–43). Scheidel (1997: 163 n. 29) gives quite the wrong impression on this matter.

⁴⁸ Herrmann-Otto (1993: esp. 264).

⁴⁹ This matter is ignored in Scheidel's account.

⁵⁰ This case has been reinforced by Bagnall (1997: 121–38).

⁵¹ Bagnall and Frier (1994: 94).

⁵² Ibid. 157.

⁵³ Harris (1980a: 119) [[above, p. 64]].

⁵⁴ Higman (1984: 118).

years ago, and may in fact be unusable. Not that scholars were unaware, even in those remote times, that in many ancient milieus males were thought to be worthier of epitaphs than females were.⁵⁵ More detailed work has now been done which shows that habits of commemoration can skew the apparent sex-ratio—in either direction.⁵⁶ Furthermore, the slaves of the super-rich might be atypical in this respect. It is none the less striking that the epitaphs of such households several times show male slaves outnumbering female by about three to one,⁵⁷ an imbalance greater than Shaw's researches on Latin epitaphs have uncovered in any tranche of the free population. And in so far as we are dealing in these cases with privileged slaves, with unusually good chances of arranging sexual and domestic relationships for themselves, we might reasonably guess that the sex-ratio we find among them is actually lower, i.e. more nearly natural, than it was in some households. Still more striking as evidence about urban *familiae* is the inventory of the town slaves of the rich Alexandrian Ti. Iulius Theon, who died in 111: of the 59 slaves whose gender can be determined from this damaged document, only two were female.⁵⁸ All this is supported by the evidence that for many occupations which women could have performed at least as well as men, men were preferred.

In pursuit of facts about the sex-ratio among slaves, De Ste. Croix claimed to find Columella more interested in female slave labour than the earlier agronomists had been.⁵⁹ That would be a quite logical thing to expect, but the pair of texts to which De Ste. Croix refers will not bear anything like this weight.⁶⁰ The likelihood that any landowner who had any choice in the matter (including small landowners who were able to cause slave-born children to be 'exposed') preferred male slaves is overwhelming. Female slaves working on the land in the high Roman Empire may have been a rarity.

The obvious counter-argument is that over time the natural sex-ratio is likely to have reasserted itself, as in the Americas.⁶¹ And anyone who models

⁵⁵ E.g. Treggiari (1975b: 395).

⁵⁶ See esp. Shaw (1991: 81–2).

⁵⁷ 77 per cent of the commemorated household staff of Livia appears to have been male (Treggiari 1975a: 58), as were 66 per cent of the commemorated town slaves of the Statilii and Volusii (these numbers include freedmen) (Treggiari 1975b: esp. 395, who hesitantly argued, n. 10, that since burial clubs open to women were in question 'they should have had an equal chance of being commemorated'). At Carthage, 76 per cent of the recorded members of the imperial household were male: Weaver (1972: 172).

⁵⁸ *P.Oxy.* XLIV.3197. No other Roman inventory of comparable size seems to have been published. [[But see the Addendum.]]

⁵⁹ De Ste. Croix (1981: 588), with proper reservations about the potential significance of such evidence.

⁶⁰ 12.4.3: some authorities said that food should be served by persons without sexual contacts, i.e. male or female children; 8.2.7: a boy or an old woman should be put in charge of stray chickens. This is not a rich harvest from many hundreds of pages. In 12.3.5–9 he describes the duty of the *vilica*, the estate-manager's wife, and she seems strangely isolated from other women.

⁶¹ Cf. Patterson (1982: 134). Scheidel (1997: 169) attributes to Eltis and Engerman (1993: 321) the view that the demographic effect of an unnatural sex-ratio on a slave population 'should not be overrated', implying apparently that it was never important, which is not at all what they say.

such a sequence of events mathematically will realize how ineluctable such a trend is—on two conditions.⁶² One is that the female children of slaves survived to adulthood in roughly the same numbers as the male children. In reality it is quite possible that the mortality of slave-born girls was much worse than that of slave-born boys. Since the ‘exposure’ of infants was commonplace in many areas, it was possible to distort the natural sex-ratio (and child-rearing practices may also have favoured the survival of the males). Since slaves were treated as commodities, relative survival rates will have depended in part on demand. The slave-owner who went to market purchased males if it pleased him to do so. The other precondition of a return to a natural sex-ratio is that there should not have been a disproportionate addition of males to the slave population from outside. But in the Roman Empire there is likely to have been precisely that. Males were probably in the majority both among the external recruits to the slave population (slaves imported across the frontiers) and among the internal recruits (foundlings and the ‘self-sold’). Male war-prisoners are likely to have been more numerous than female. In all these circumstances, it is *possible* that the sex-ratio remained high over a long period.

A negative NRR in a slave population can come from an imbalanced sex-ratio, infertility, high mortality, manumission, or from any combination of these; in the Roman Empire all four factors probably had their effect. Only manumission requires a further comment here. There is no need to reiterate refutations of the view that the duration of slavery was often only ‘a couple of years’,⁶³ which would have made the slave system unsustainable and is in any case supported by no evidence whatsoever. Cicero seems to assume that a good slave obtained freedom after six years, and it is perhaps not quite enough to dismiss that as a rhetorical distortion (as most scholars seem to).⁶⁴ But the *average* period of servitude, including the best-treated urban slave and the most despised *vinctus* on a remote country estate, must have been much higher, even when due account is taken of the slaves’ undoubtedly poor life

⁶² If we descended to the era of Justinian, or even of Diocletian, the story might be different (see the end of this article); the point is not to deny that the natural sex-ratio ever reasserted itself, but that it did so quickly. The Aezani text of Diocletian’s Price Edict shows that female slaves received the same valuation as males in only one age-group, from 8 to 16 (otherwise they cost less); prospective fertility is likely to be one of the causes (see Scheidel 1996c).

⁶³ Alföldy (1972: 120) used this expression, but stepped back from it in the *Nachträge* accompanying the 1986 reprint (p. 330); these *Nachträge* do not address the problem of the slave-supply. Against Alföldy’s theory of easy manumission: Harris (1980a: 118) [[above, p. 61]], Wiedemann (1985).

⁶⁴ *Phil.* 8.32: ‘cum in spem libertatis sexennio post sumus ingressi diutiusque servitutum perpessi quam captivi frugi et diligentes solent’ (‘now that after six years we have begun to hope for freedom and have suffered enslavement longer than slave captives usually do if they are honest and hard-working’) (49–43 bc are the six years). This cannot be nonsense. Rather, certain kinds of slaves could hope for freedom after six years. Perhaps wealthy Romans already made a mental division of slaves into quasi-classes, as they certainly did later on (Ulpian in *Dig.* 47.10.15.44). Incidentally, Scheidel’s assertion (1997: 158) that I hypothesize a ‘staggering amount of social mobility’ is spun out of nothing.

expectation. But what matters most here is whether manumission impeded the slave population's ability to reproduce itself.

Freedom, like death, could come to a slave at any age. One would like to know whether it affected women within the reproductive cycle to a disproportionate extent; it might be expected, for example, that women of marriageable age would be at an advantage in gaining manumission. But there seems to be no quantifiable evidence. The Egyptian census-returns show a *lower* chance of manumission for females (in an extremely small sample), but it would be better not to rely on these texts for a generalization about this question. The epigraphical evidence from Delphi studied by Hopkins is far more extensive and more likely to be typical of Graeco-Roman slavery in general; 63 per cent of those manumitted were female.⁶⁵ Weaver has argued that in the epigraphically commemorated population of Rome itself, female slaves were manumitted at an earlier age than males.⁶⁶

Let us imagine the fertility of a typical cohort of Roman slave-women (those born in a single year), and compare it with that of a contemporary cohort of free Roman women.⁶⁷ With respect to the latter group, see Table 4.1.

If the population of the Roman Empire remained stable in the high Empire (conquests aside), the long-term overall NRR of that population will have been < 1.00 (since there must have more immigration than emigration); I use the figure 0.95 purely for illustrative purposes. In reality it seems likely that there was spasmodic growth throughout the period from Augustus to the Antonine

Table 4.1. Hypothetical net reproduction rate and gross reproduction rate of free women, based on the Coale–Demeny life-table Model West Level 3 Female and Model South Level 3 Female.⁶⁸

NRR	0.95	1.00
GRR (West)	2.21	2.54
GRR (South)	2.20	2.64

⁶⁵ Ibid. 139.

⁶⁶ Weaver (1991: 179–82).

⁶⁷ For the concept of cohort fertility see e.g. Newell (1988: 52–62), Halli and Rao (1992: 42–5). The cohort we are considering will not, of course, all have been born into slavery.

⁶⁸ Coale and Demeny (1983: 57, 82, 399, 449). The applicability of Model West (or South) to the ancient world needs to be re-examined in the light of the history of causes of mortality (none of the 130 tables underlying Model West goes back earlier than 1870 (Coale and Demeny 1983: 12), a date later than, among other things, Lister's discovery of antiseptics; 5 of the 22 tables underlying Model South are from Italy, 1876–1910, all the others are from 1900 or later (ibid.)), but the problem cannot be pursued here. It is unlikely, for example, that many if any of the countries whose statistics went to make up Model West had nearly as high a level of infant mortality from child-abandonment. Level 3, incidentally, means that the table concerns a population in which $e_0 = 25$.

Table 4.2. Hypothetical number of life births necessary to ensure an 80 per cent self-replacement rate of the slave population, version A

Sex ratio	Males as % of the total slave population	GRR	GRR + 105%
150	60	3.51	7.20
100	50	2.81	5.70

Table 4.3. Hypothetical number of life births necessary to ensure an 80 per cent self-replacement rate of the slave population, version B

Sex ratio	Males as % of the total slave population	GRR	GRR + 105%
150	60	3.95	8.10
100	50	3.16	6.48

plague,⁶⁹ so we shall not go far wrong thinking of the NRR as 1.00. That means that according to Model West the average woman who survived throughout her reproductive years will have had about 2.54 girl babies and 5.16 babies in total.⁷⁰ Nothing impossible about that. But let us turn to our cohort of slave-women. A certain percentage (*m*) of its children will either have been born after the mother's manumission or have been free at birth in virtue of non-Roman laws. Life expectation will have been lower than in the free population: I consider even $e_0 = 20$ to be an improbably high figure,⁷¹ but to avoid fruitless disputes (and also for the practical reason that I have not found a model life-table for an e_0 value lower than 20), we can apply Model West Level 1 Female.

It rapidly emerges that the SRH is untenable. How many live births per woman would such a population have to produce in order to remain stable, or to replace 80 per cent of itself (Scheidel's supposition)? Table 4.2 shows how many live births would have been necessary to ensure an 80 per cent replacement rate if $m = 10$, while Table 4.3 shows how many would have been necessary if $m = 20$.⁷² | It is a most implausible double to suppose both that the slave population had a natural sex ratio and that it had such a high level of fertility.⁷³

Between 1820 and 1860 the slave population of the United States grew by 156 per cent—far faster, in other words, than the slave population of the post-

⁶⁹ Pleket (1990: 57), Shaw (1994: 190–91).

⁷⁰ On the assumption that there were about 105 live male births for every 100 female ones.

⁷¹ Cf. Duncan-Jones (1990: 100–101).

⁷² If the sex-ratio of the slave population was really as high as 300, self-reproduction would have required even more absurd levels of fertility; but I do not dismiss the possibility that after some decline such a population might reach the sex-ratios used in the text.

⁷³ Applying Model South would require an even higher GRR.

Augustan Roman Empire can ever have grown. The GRR of this population was obviously high, apparently 3.9–4.0 in the period 1850–59 (in other words, a woman who lived to menopause bore an average of about eight children) and earlier on somewhat higher still. For the reasons already explained, the Roman figure has to be much lower and certainly lower than 3.51.⁷⁴

Orlando Patterson observed that ‘even if a slave population is biologically nonreproductive, birth may still remain the single most important source of slaves’, which I take to be both self-evident, and also irrelevant to the claim that 80 per cent of Roman slaves were the children of slaves.⁷⁵

IMPORTED SLAVES, THE SELF-ENSLAVED, ENSLAVED FOUNDLINGS

What about other possibly important sources? Imports, first of all. They have not normally been thought of as a major source of supply in imperial times, though there is quite a lot of scattered evidence. Scheidel contributes the useful consideration that the areas which are most in question were not densely enough populated to be able to fulfil the Roman Empire’s need for slaves. He lists these areas as Ireland (!), Scotland, Germania, south Russia, the Caucasus, the Arabian peninsula, and the Sudan; Mesopotamia and Iran, he says would have had to supply slaves for the Parthian Empire.⁷⁶ We should also factor in slaves who emerged from Indian Ocean trade (perhaps in the main from Somalia) and from Saharan trade.⁷⁷ It is suggested that the area from which the Roman Empire imported its slaves will probably have had a population as low as fifteen million.⁷⁸ That is a highly speculative figure, which may be thought to include an element of special pleading, but Scheidel is undoubtedly right to suggest that sheer lack of population would have prevented the external periphery from satisfying a large proportion of the Roman Empire’s appetite for slaves. The European and African populations in question were relatively un-urbanized, and in the same areas even the extent of peasant agriculture may have been quite limited. The weakness of the argument is that it assumes that populations in the ‘catchment’ areas were stable. In reality they

⁷⁴ Michael Haines’s extrapolation (personal communication) from the estimate of A. J. Coale and N. W. Rives that the Total Fertility Rate of the whole black population, slave and free, of the US in 1850–59 was 7.90 (Coale and Rives 1973: 26).

⁷⁵ Patterson (1982: 133).

⁷⁶ Scheidel (1997: 159).

⁷⁷ Somalia: see esp. *Periplus Maris Erythraei* 13. Sahara: *CIL* VIII.4508, with Mattingly (1994a: 156); Brett and Fentress (1996: 68–9). For Mauretania, see Harris (1980a: 126 [[above, p. 76]]).

⁷⁸ Scheidel (1997: 159–60).

may well have decreased under the impact of proximity to the Romans; and another possibility is that the areas immediately beyond the Roman frontiers were repopulated from without. The Roman economy may have had a vast magnetic effect, saving the closest external regions from depopulation.⁷⁹

The rather abundant evidence for slave importation does very little to help us quantify it.⁸⁰ The problem is intertwined with the not-to-be-neglected question of prisoners-of-war. Some have estimated that the average number of peacefully imported slaves fell within the range 20,000–25,000, but absolutely no reason has been adduced for excluding a lower number or a higher one.⁸¹ Apart, that is, from the fact that without imports there would probably have been a supply crisis of which we see no sign.

How much of a part was played by self-enslavement? Historians have sometimes neglected this practice,⁸² presumably because it was one of those *atrocissima* which dignified Roman society did not readily write about (which is precisely why it *does* appear in Petronius, *Sat.* 57.4). But in the startling passage from which Ramin and Veyne begin their discussion, Seneca includes *mangones* among those who *even though they are useful to others* do not really convey *beneficia* (since they reap advantage for themselves in the process). He takes it to be obvious that *mangones* are useful to those whom they sell ('mango venalibus prodest').⁸³ These beneficiaries can only be those who *wish* to be sold. Seneca's assumption that his comment will make sense to the Neronian reader is valuable evidence. Both Clement, Bishop of Rome, and Papinian refer to the frequency of this practice, while Petronius, Dio Chrysostom, and Ulpian make it entirely plain that self-sale was commonplace.⁸⁴ If the literary references are judged to be few, that is understandable in the light of the fact that self-sale offended one of the cardinal principles of Roman law, the inalienability of freedom.⁸⁵ The legal experts had to grapple with this difficulty and duly created a massive loophole.

⁷⁹ The notion that in Roman times there were major population movements in north-east Europe, having gone through a period of unpopularity, seems to be taking hold again; see e.g. Heather (1996: 48–50).

⁸⁰ For a survey of the evidence see Harris (1980a: 124) [[above, pp. 73–74]]. If, as Tacitus says (*Germ.* 19), the Germans did not expose infants, that may have been because in case of necessity they, in essence, exported some of them as slaves; they supposedly exported persons who were enslaved for gambling debts (*Germ.* 24).

⁸¹ There is no demographic reason why there should not have been 40,000 slaves imported every year over a long period, though if compelled to guess I would opt for a lower figure. Scheidel (1997: 164 n. 34) seems to imply that the figure of 70,000 a year, said to be the maximum reached in the Atlantic slave trade, means that 40,000 is too large a figure, but the one figure has no bearing on the other.

⁸² But see e.g. Crook (1967: 59–60), Alföldy (1972: 25 = 1986: 315).

⁸³ *De ben.* 4.13.3. They are among those who 'summam utilitatem aliis adferunt', 'confer a very great advantage on others'.

⁸⁴ Clemens Romanus 1.55.2; Papinian in *Dig.* 41.3.44 pr. ('frequenter ignorantia liberos emimus' 'we frequently buy free persons in ignorance'); Petronius, *Sat.* 57.4; Dio Chrysostom 15.23 (?); Ulpian in *Dig.* 21.1.17.12, 28.3.6.5.

⁸⁵ For a soldier, self-sale was not surprisingly a capital offence, *Dig.* 48.19.14 (Macer).

It was essential to do so for two separate reasons which are both elucidated by Ramin and Veyne, one being life-threatening poverty and the other the desirability—in the eyes of many people—of the position of slave *actor*, the slave who in every substantial Roman household handled financial transactions.⁸⁶ A job as an *actor* was a specialized inducement, which can only have affected a few hundred men a year, but the threat of hunger will in bad harvest years have affected many thousands. One notes that the authors just cited came from North Africa and the Greek East as well as from Italy, and that they allude to both Roman citizens and non-citizens.⁸⁷ We are now well aware that hunger periodically attacked diverse areas of the Roman Empire, and that the response of officials was often inadequate.⁸⁸ The effects to be expected are child-abandonment and self-sale, rather as when in seventeenth-century India, as Braudel records, a Persian ambassador acquired ‘innumerable slaves... for almost nothing because of the famine’.⁸⁹

The enslavement of foundlings is a phenomenon which historians have sometimes attempted to evade, but there is no need to cite yet again the evidence that it was widely practised in the Roman Empire, or the evidence that, like self-sale, it served as a mechanism for transforming the freeborn into slaves.⁹⁰ There may sometimes have been a degree of connivance between the expositors and the ‘rescuers’,⁹¹ unless allusions to such behaviour are part of the self-exculpatory mythology of the subject.

Two rates are important for the theory that foundlings met a major part of the Roman Empire’s demand for slaves, the rate of child-exposure and the rate of survival. As for the former, Scheidel tries to shock us into incredulity by writing that, on the above hypothesis, ‘every other mother [or rather, every other mother who survived to menopause] would have exposed one of her children’.⁹² But even higher rates of child-abandonment than this are well-attested for a number of milieux and are likely to have obtained among many other populations. As David Kertzer has observed, drawing on recent work,⁹³ levels of abandonment ranged from 20 per cent to over 35 per cent of all births in such cities as Paris, Vienna, Milan, and Florence [[at various dates in the eighteenth and nineteenth centuries]].

Why should we deny the possibility that a comparable rate obtained in many urban and rural environments in the Roman Empire?⁹⁴ This is not to

⁸⁶ Cf. Aubert (1994: 194).

⁸⁷ Ramin and Veyne (1981: 496) consider it to be the third great source together with foundlings and self-reproduction.

⁸⁸ See Garnsey (1988). [[And see Chapter 2.]]

⁸⁹ Braudel (1982[1979]: 77). ⁹⁰ Cf. Harris (1994: 1, 20–21).

⁹¹ Ramin and Veyne (1981: 477).

⁹² Scheidel (1997: 164).

⁹³ In Tilly et al. (1992: 15). See also Harris (1982). Brulé (1990) has hypothesized that more than 50 per cent of female infants were exposed in some Hellenistic cities.

⁹⁴ Scheidel (1997: 165 n. 37) [[... appears to claim]] that high levels of abandonment were brought about by the existence of foundling hospitals, which were of course unknown in

ignore the Romans' openness to what Apuleius calls *insita matribus pietas* (*Met.* 10.23). As for the rate of survival, we have very little to go on. I may have over-reacted against the poor arguments which John Boswell used in favour of a high rate of survival, and I do not now regard the disastrous mortality experience of foundling hospitals as strong evidence that few *expositi* survived. If, by way of illustration, the free population of the Roman Empire in AD 100 was 50 million, if it had a birth-rate of 47.38 per 1,000 (Frier) and abandoned 20 per cent of the new-born, and one third of these passed into slavery, that would mean 157,933 new slaves a year.

‘INTEGRATION’ AND PATTERNS IN THE SLAVE TRADE

Another grave weakness of the self-replacement hypothesis is that it is entirely inconsistent with the extensive evidence that there was a large-scale slave trade within the Roman Empire, and one which led from certain areas—Thrace, Asia Minor, and Syria above all—to Italy and the other areas of overseas demand. Ephesus, at the end of the Republic and in high imperial times, was the hub, as the new customs law tends to confirm.⁹⁵ According to the SRH this long-distance trade had very little reason to exist after the deceleration of the wars of expansion. The SRH implies that the vast majority of the slaves needed in, for instance, Italy were born in Italy. It thus entirely fails to explain the westward flow of slaves from the provincial regions just mentioned. The years have added to what was already an ample body of texts,⁹⁶ showing for example | that there was a *statarion*, a slave-market, at Sardis,⁹⁷ as well as at Ephesus, Thyatira, Magnesia-on-Maeander, Acmonia, and probably dozens of other places in this region.⁹⁸ These buildings did not exist for the occasional trading

antiquity. But very high levels of abandonment are known from, indeed commonplace in, other worlds without foundling hospitals (Dickman 1975: 130); and the basic premise is faulty, for we must assume that abandoning parents had at least a rough idea that foundling hospitals were dangerous—and being cauldrons of disease, it is quite possible that traditional foundling hospitals led to a higher mortality rate than Graeco-Roman exposure did.

⁹⁵ Engelmann and Knibbe (1989: lines 11–12, 98–9, 117–22). [[See now the edition of Cottier et al. (2008).]]

⁹⁶ Cf. Harris (1980a: 126–8 [[above, pp. 77–81]]. I should also have mentioned the allusion to the slave trade in the Hadrianic (not first-century) customs law of Caunos (Bean 1954: 97–105 = *SEG* XIV (1957), no. 639 [[= Marek (2006), no. 35]]).

⁹⁷ See the probably Flavian inscription published by Herrmann (1996: 175–87) (the text has been quoted elsewhere, e.g. *SEG* XLIII (1994), p. 311). [[See *SEG* XLV (1996), no. 1524.]]

⁹⁸ The question of the characteristic architecture of Graeco-Roman slave-markets [[has been much discussed. See above, p. 87]].

of a few score of slaves (that could have been done in an ordinary marketplace), but for a large-scale and rather regular business.⁹⁹

Some will also consider it a serious disadvantage of the SRH that it makes Caesar Augustus into a blunderer. In order to provide for the pay of the 7,000 *vigiles* of Rome and for some other expenses, he introduced (AD 7) a 2 per cent tax on slave sales (Dio 55.31), which means that he believed that hundreds of thousands of taxable slave sales (I once hypothesized 250,000) took place every year. At some date between the years 7 and 43, the tax-rate was doubled, perhaps by Caligula.¹⁰⁰ But once again, the whole phenomenon is unintelligible if large households were able to fulfil most of their need for slave labour from within.

Finally, integration. Both Finley and Duncan-Jones have suggested in different ways that the economy of the Roman Empire was little integrated, and should rather be seen, in consequence, as a congeries of local or regional markets. The nature of the slave trade might be an additional reason to reject this model—if we knew more about it, and in particular if we knew more about prices. I would suppose that slave prices in Rome, Carthage, Ephesus, Alexandria, and inland Asia Minor reacted to each other as quickly as Roman information technology permitted—there is no reason to believe the contrary. But it cannot be proved.

CONCLUSION

It is both true and untrue that the relative importance of different sources of Roman slaves ‘cannot be gauged from ancient texts’.¹⁰¹ Enough is known, however, to establish the improbability of the SRH in the terms in which Scheidel has stated it, and to rehabilitate the importance of importation, and more particularly of self-sale and the enslavement of foundlings. But this is a story about the high Roman Empire, and something like Scheidel’s model (let it be reiterated that we should not see the choice as a stark ‘either/or’) must in the end have imposed itself. When?

[[Addendum

As stated above, the main argument propounded in this article would be harder to believe if the free population of the Roman Empire somehow reduced its natural

⁹⁹ About the slave-trade there is more to say elsewhere in view of such studies as Coarelli (1987: 175–90).

¹⁰⁰ Harris (1980a: 121) [[above, p. 68]]. For detailed but inconclusive discussion of the pay of the *vigiles* see Sablayrolles (1996: 333–42).

¹⁰¹ Scheidel (1997: 156).

fertility to a significant degree (and hence felt less pressure to abandon small children), for instance by means of the herbal medicines described by John Riddle. I seem to be one of the few ancient historians to consider this a real possibility (Harris 1993a; see on the other side Frier 1994; Scheidel 2007: esp. 67). It could be argued that some regions followed one pattern, some another.

The rebuttal of this article offered by Scheidel (2005) finds a weakness in it that is discussed in the next paragraph but one, but it depends on a number of quite implausible assertions and ignores a good deal of crucial evidence. I leave aside the inexplicable assumption (p. 67) that demand for wine in Roman Italy was all urban (which tends to lower the number of slaves who are likely to have been employed in wine production). There are no 'purely mathematical reasons' (p. 72) why the sex-ratio of Roman slaves in Italy should have reached natural levels at any time in the middle or late Republic; it mostly depends on the conditions of slave life and on the proportion of new slaves who were male and female. Much of course remains unknown on the latter question, but I have set out the reasons for supposing that demand was heavier for male workers than female ones, and have not read anything convincing to the contrary. The notion that women and children were more likely to have been enslaved in war than males is useless as a generalization (once again, demand is crucial). The sex-ratio of slaves in Roman imperial Egypt 'cannot prove anything about late Republican Italy', as Scheidel himself recognizes (p. 73), nor, I would add, about any other area of the Roman world that made heavy use of chattel slavery. The claim, undocumented, that 'ancient sources stress the availability of women and slaves' in the slave trade has no basis known to me and is beside the point, for no one doubts that at all periods in question many women and children were bought and sold; what matters is the ratio of males, including boys, to females, and here our only guides are three: the importance of warfare, the nature of demand, and also the comparative evidence (about which enough has been said above). But what most flies in the face of probability and the evidence is the notion (p. 75) that in the areas that made heavy use of chattel slavery it was common for slaves to enjoy something like a reproduction-favouring family life. It is true and trivial that we have 'no way of telling how many slaves lived in stable relationships', but I submit that not even the most optimistic or sentimental reading of the sources, sufficiently summarized above, could lead one to think that such relationships were the norm or even common.

On the infertility of early-modern slave populations in Africa see Meillassoux (1991: 78–84).

David Hume, in his essay 'On the Populousness of the Antient Nations' (*Political Discourses* (Edinburgh, 1752), 167–80), made a forceful case against the fertility of the Greek and Roman slave populations. Lo Cascio (2002: 61 n. 27) justly observed that both Scheidel's account and mine are too static, but he does not fill the gap himself. If I were to address this problem again, I would argue for an upwards curve in the proportion of Roman slaves who were born to slave mothers. The curve may have begun after the end of Augustus' numerous wars of aggression. Columella's incentives for fertile slaves (1.8.19) should be seen as a sign that the more intelligent kind of landowner, having noticed some pressure on the supply of slaves, had begun to do something about it. Later, such examples probably had increasing effects, especially after Hadrian's more passive frontier policy severely diminished the supply of foreign

prisoners (though the suppression of Bar-Kochba's rebellion in 135 (above, p. 69) brought the Romans some respite). In short, the curve gradually steepened (though recent work has brought home the frequency of provincial rebellions even in the second century). One sign of this will have been *Fragmenta de iure Fisci* 13 (above, p. 66), which whatever it said exactly undoubtedly rewarded very fertile women slaves in the imperial 'household'—at some date in the second century that we cannot specify. By the time of the Severan jurists it is clear that those who purchased women slaves were normally interested in their ability to bear children (this will not have been new), but even now, as Ulpian says, 'slave-women are not commonly acquired so that they may produce children'. Some might want to argue (I would not) that the renewed aggressiveness of Severan frontier policy was influenced by a perceived shortage of slaves. At all events, as Scheidel has shown (1996c), Diocletian's Price Edict assigns special value to female slaves when they are between the ages of 8 and 16, and part of the reason is likely to have been fertility. By the early- or mid-third century, it is possible that, as Scheidel hypothesized for the high Empire, children born to slave women were indeed much the most important source. It is unsurprising that in the largest known late-antique slave inventory (from Thera: Geroussi-Bendermacher 2005), males and females are about equal in number ($N = 115$.)]]

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Part III

Production

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Roman Terracotta Lamps

The Organization of an Industry

(1980)

INTRODUCTION

It should be plain that important progress is to be made in the economic and social history of the Graeco-Roman world through more systematic studies of the material remains.¹ In the field of ancient manufacture and commerce, M. I. Finley has called for 'a more sophisticated effort to approach quantification and pattern-construction',² and other historians too are well aware of what needs to be done.³ Doing it, however, can be difficult, for such projects, if approached with a scholarly desire for precision, bristle with complications, and the results can often be no more than tentative. Such is the case with this study of the terracotta lamp industry. For their part, the archaeologists who have studied groups of terracotta lamps, whether from particular sites or particular museums, have not altogether succeeded in fitting the material into the known framework of Roman life (this is not to suggest a primacy of written over material sources, simply that both are indispensable in economic history).

So great is the number of surviving terracotta lamps in many areas of the Roman Empire that there is no prospect of their being fully catalogued for a long time to come. It is true that in recent years there have been some important contributions to the descriptive literature, with the appearance of catalogues, or at least lists, of lamps from a number of major sites and museums, as well as of those from some lesser but still interesting collections.⁴

¹ This article arose from work on the history of northern Italy which was supported by the National Endowment for the Humanities and the American Philosophical Society. I thank J. H. D'Arms and D. M. Bailey for their help.

² *Finley (1985: 33). [[In the following notes those items marked with an asterisk appear in the book's main bibliography; the others appear in a bibliographical appendix to this article, pp. 141-4.]].

³ See some of the contributions in *D'Arms and Kopff (1980).

⁴ [[Bibliographical details are to be found in the appendix.]]

| [[...]]⁵ It is [[, however,]] symptomatic of the lack of Italian catalogues that we have no description of the holdings of the civic museum of Modena, though Mutina probably included in its territory at least one of the original centres of 'Firmalampen' manufacture, that of Fortis; 'Fortis' is the commonest of all 'Firmalampen' marks. Catalogues are also regrettably lacking in some other significant areas, particularly in the Gallic provinces.

Enough information is now available, however, to justify an overall discussion of the central problem which such lamps raise for the historian: the organization of the industry which produced and sold them. Not that this question has been altogether neglected in the past—in fact most of the scholars who have published large groups of lamps have hazarded some comments on the subject. Some of this commentary has been learned and acute. But more is needed: a full discussion should be based not only on the facts about the lamps themselves but also on what we know about other segments of the Roman ceramics industry, and on what the legal, literary, and epigraphical sources tell us about Roman commerce. In this article then I shall analyse the structure of the industry which produced signed lamps, including 'Firmalampen', as far as the available evidence permits.

The terms 'signed lamps', 'Firmalampen', and 'industry' all require some initial comment. The first of these will be used to refer to all lamps which were made with names on the bases, even though those names are not always the names of the actual manufacturers. Such 'signatures' appear on lamps of many different types. The category includes the large sub-category 'Firmalampen'. This expression, which appears to have been coined by O. Fischbach,⁶ is conventionally used to refer to the lamps classified by S. Loeschcke (whose typology is the best known) with the numbers IX and X.⁷ In the great majority of cases, while they have no decoration in the bowl or on the base, 'Firmalampen' give the maker's name, or what appears to be such, on the base; to take one place as an example, no more than 11 per cent of the 'Firmalampen' of Aquileia are 'anonymous'.⁸ 'Firmalampen' have often been referred to in English as 'factory lamps', but this term conjures up some inappropriate images and should be avoided. The Roman terracotta lamps that are not 'Firmalampen' are often categorized as 'Bildlampen', i.e. figured lamps. One disadvantage of this convention is that many 'Bildlampen', of types other than Loeschcke IX and X, also have makers' names and are just as likely to be the products of large firms.⁹ Unfortunately, no attempt to give a more logical sense to the term 'Firmalampen' has much chance of success. And as it

⁵ [[Some further bibliographical laments are omitted.]]

⁶ Fischbach (1896: 10–11).

⁷ See *Loeschcke (1919: 255–73).

⁸ Cf. Buchi (1975), Table 5.1.

⁹ On this confusion see Balil (1968a: 159 n. 2), *Provoost (1976: 558 n. 34).

happens, Loeschcke IX and X do have a distinctive geographical distribution which makes the word worth retaining.

The term 'industry' will also be used here with a reservation. A writer about the Roman ceramics trade has complained with some justification that the word can be dangerously misleading when applied to a mode of production from which power-driven machines were absent.¹⁰ But perhaps the risk that we shall forget that the economy of the Roman Empire was 'pre-industrial' in this sense is not now very great. Any production of artifacts in large numbers can without great discomfort be called 'industry', however the production was organized. There is no *a priori* supposition in this paper that any lamp-making enterprise had many workers in it.

The central problem is this. Whereas one might have expected that all simple terracotta lamps were made by small local enterprises which seldom exported them beyond the local town or village (and this was indeed part of the system), the enormous diffusion of certain lamp-types and, even more strikingly, of certain makers' names suggests strongly that something more complex was going on. Where then did production take place in relation to the markets for the lamps, and how were the units of production related to one another? Were there in fact large enterprises at work in the lamp industry, and if so, how did they function?

From the following study it emerges that, although most of the lamps with widely diffused makers' names were made in scattered locations and quite near the places where they were sold, there probably was a real connection between many if not all of the workshops that used particular names. While some unauthorized use of names must have occurred, a major part of the system consisted of branch workshops; this becomes more credible, and can be understood better, if we give due attention to what is known about *institores*, the managers of such subsidiary enterprises and an important element in the Roman economic system.

THE LAMPS AND THEIR DISTRIBUTION

The basic forms of Roman terracotta lamps have often been described. The typologies of Dressel and Walters¹¹ are still sometimes cited, but simplicity and custom have established Loeschcke's system as standard. It at least has the advantage of being familiar to all interested scholars, and types classified by Loeschcke will be referred to in this article by his numbering. Unfortunately

¹⁰ *Pucci (1973).

¹¹ H. Dressel, *CIL* XV, pl. III; Walters (1914: xxiii–xxvi, pls. xli–xliii). Dressel's typology was discussed by Lamboglia (1952: 87–9) (cf. also Bailly 1962).

the Loeschcke system is not comprehensive, and other classifications have been devised, notably by Broneer, Iványi, Ponsich, and Deneauve.¹² New systems continue to appear,¹³ contributing somewhat to a confusion which only an authoritative Empire-wide survey could dispel.

The lamps under discussion, though they vary greatly in detail, are almost all covered by the ensuing description: the lamp is a shallow covered container of terracotta, with an opening for the wick towards the front of the upper surface; in most cases, the main part of the lamp is circular or roughly circular, with a nozzle at the front, though in some types nozzle and body form a single unit roughly in the shape of a lyre. Dimensions are generally in the range 6–14 cm (length) × 5–9 cm (width) × 2–4 cm (height, without handle). The upper surface or bowl of the lamp sometimes contains a decorative element (much commoner with some types than with others); and the base of the ‘signed’ lamps to be discussed here carries a Latin name, usually in relief. Other features, such as handles, are common but far from uniform. It remains true that the physical properties of Roman terracotta lamps have yet to be investigated in any systematic way at all; how much good such information might do I shall discuss later.

The proportion of surviving terracotta lamps that are ‘signed’ varies with time and place. The earliest lamps signed in Latin date from the 20s BC, or perhaps slightly earlier,¹⁴ but it was only in the last years of the first century AD that signed lamps reached something like their full geographical range.¹⁵ Balil, a knowledgeable investigator, having emphasized that only full excavation reports can answer this question clearly, estimates that in Rome itself some 30–40 per cent of lamps are signed in burials of the period from the late first century down to AD 150. In Spain, on the other hand, he guesses that only 10–15 per cent of all terracotta lamps were marked in this fashion.¹⁶ More helpful may be the fact that, to judge from an imperfect catalogue, some 47 per cent of the lamps found in recent excavations at Sarmizegetusa (all naturally of the second century or later) were signed.¹⁷ This was the sort of proportion of the lamp trade which signed lamps eventually achieved, at least in some areas. As to the significance of signed lamps for the lamp industry as a whole, this will be discussed below.

¹² Broneer (1930: 70–122), Iványi (1935: 7–22), Ponsich (1961: 3–46), Deneauve (1969: chart opposite pl. xv).

¹³ As in *Provoost (1976) and in Alicu and Nemeş (1977: 21–35). On the principles which ought to underlie a new typology see Carandini (1977: 174) with regard to Bisi Ingrassia (1977).

¹⁴ For the 20s as the date of the ‘C. Vibi/Tibur’ lamps from the Magdalensberg, see Farka (1977: 182–3). For other cases see Bailey (1975: 345–9). The earliest Greek signatures on lamps found at Delos belong to the last quarter of the second century BC according to Bruneau (1965: 157–9).

¹⁵ On the chronology, see below, p. 138.

¹⁶ Balil (1968a: 161). See also idem (1969: 9).

¹⁷ Alicu and Nemeş (1977: 3) (on the excavations since 1973), etc.

A recent list of makers' names on ancient lamps included roughly 1,700 in Latin and roughly 400 in Greek.¹⁸ Of the Latin marks, with which this paper is mainly concerned, only 20–25 per cent had a significant circulation away from their primary territory, that is to say away from their presumed area of manufacture. Nonetheless, the lamp industry has a somewhat oligopolistic appearance, for in most places the vast majority of signed lamps exhibit common marks which are also known from far distant sites. Thus the provenances of surviving signed lamps could theoretically be illustrated by a series of several hundred distribution maps, each of which, however, would need to be drawn in different versions to represent diachronic changes.¹⁹ In practice, some patterns of distribution can readily be discovered. The four commonest patterns are the following:

- I. Marks found in small numbers within the territory of a single city or some area not much larger, with at most isolated examples from elsewhere. For the Spanish provinces such marks have been catalogued by Balil, and his study *Lucernae singulares* contains many more.²⁰ In northern Italy such marks are not very common, but one instance is 'Felicio'; besides ten 'Felicio' lamps from Aquileia, only two certain examples are known, one from Cologne and one from Pannonia.²¹ Rhineland instances include 'Catulli' (three lamps from Argentorate, one from Moguntiacum) and 'Talutii' (three lamps from Argentorate).²² In Pannonia one of the few instances is provided by the remarkable lamps, five in all, marked 'Fabi' or 'Fab'.²³ A Rumanian scholar has recently categorized seven lamp-marks as entirely local to Apulum (but one of them, 'Armeni', really belongs to our next category).²⁴ The total number of signed lamps in this category is relatively small.
- II. Some marks have what might be called a regional distribution, the lamps being found in a number of city-territories in the same general region, with at most a handful of lamps scattered further afield and nothing like the distribution through many provinces we shall meet in category III. This type of distribution is not common among Firmalampen, though the 'Armeni' mark and some others follow this pattern; twenty-four 'Armeni' lamps are known from a wide area of Dacia and

¹⁸ Mercado (1973).

¹⁹ Ponsich (1961: 69) provided a rough distribution map of the places where the marks found in Mauretania Tingitana appear, both inside and outside the province, but it is not complete. The highly schematic map of the lamp industry given by Leibundgut (1975: 106) (also in Leibundgut 1977: 97) is unhelpful.

²⁰ Balil (1966: 117–23; 1968b).

²¹ Buchi (1975: 57–8).

²² Hatt (1954: 333).

²³ Iványi (1935: 78, 90) (all of these lamps have several spouts, quite an unusual feature).

²⁴ Băluța (1975: 111–14); on the 'Armeni' lamps cf. Čičikova (1974: 164).

Lower Moesia, one from Pannonia, none elsewhere.²⁵ Another instance are the lamps of the mark 'Luc.' or 'L.V.C.', which has been convincingly localized at Puteoli or at least in the bay of Naples area, where it is widely distributed; elsewhere the mark is known from Carthage (one), the Rhineland (one) and, apparently, Miletus (three).²⁶ Another instance is 'L. Hos. Cri.', widespread in the Gallic and German provinces, but not recorded, as far as I know, elsewhere.²⁷

- III. Finally we come to the most important patterns, which are in a way similar to each other. The third pattern of distribution covers virtually all Firmalampen. This distribution always includes northern Italy, where it tends to be thickest, and there are also lamps in all or most of the following areas: the Gallic and German provinces, the upper Danube provinces, Dalmatia; most of the commoner marks are also to be found in central Italy, and some in Spain, Dacia, and Moesia. The majority of the 'signatures' consist of single *cognomina*.
- IV. Marks with this pattern of distribution are to be found in substantial numbers on both the north and the south sides of the Mediterranean, in central and southern Italy on the one side, and in Africa Proconsularis on the other. Some examples are generally to be found in all or some of the following areas: Mauretania, the Spanish provinces, southern France, Sardinia, the German | provinces. This kind of distribution resembles pattern III in that it covers a number of contiguous provinces or other large regions. The vicinity of Rome, southern France and the German provinces are the places where III and IV overlap. Most of the 'signatures' consist of an abbreviated form of a three-element Roman name, e.g. 'C. Clo. Suc.'

It is not claimed that all Latin-signed lamps fall into one of these categories. One obvious exception is the only mark which was exported from the eastern provinces in any significant quantity under the Empire (though some of those found elsewhere are probably local products), the 'Romanesis' lamps which were originally manufactured in Cnidos or Miletus.²⁸ But there is only a handful of 'Romanesis' lamps in the western provinces. The above categories

²⁵ See previous note.

²⁶ De Caro (1974). For the lamps from Miletus see Menzel (1969: nos. 180, 181, 329); for lamps from Athens see n. 77.

²⁷ The provenances referred to in *CIL* XII.5682 and XIII.10001.155, and in greater numbers by Bailly (1962: 101–6), suggest that most or all of these lamps were made in Narbonensis and in the general region of the River Saône. However no workshop has been found at Vaison in Narbonensis, as suggested by *Loeschcke (1919: 251); see Jullian (1899: 154).

²⁸ Heres (1968). The localization at Cnidos was first suggested by Walters (1914: xxxvi). Heres argued for Miletus (pp. 203–6). The period stretches from the 70s AD to the reign of Hadrian (pp. 201–3).

Table 5.1. Distribution of selected lamp ‘signatures’

	Atimeti	Cresces	Fortis	Phoetaspi	Strobili	Vibiani	C.Clo. Suc.	C.Iun. Drac.	C. Oppi Res.	Iuni Alexi
*+Northern Italy	130+	238+	676+	34	120	288+	9	3??	13–16?	2??
Aquileia	53	155	342	10	36	180	—	—	—	—
Switzerland	17	2	67	17	32	2	—	—	—	—
Vindonissa	17	—	49	11	15	—	—	—	—	—
Lauriacum	—	64	18	—	1	31	—	—	—	—
*+Pannonia	50	258	541	5	37	98	1	—	—	—
Vindobona	4	13	32	—	4	2	—	—	—	—
*Dalmatian coast (three sites)	36	80	229	16	41	76	—	—	—	—
Dacia	9	9	168	—	30	1	—	—	—	—
Danubian <i>limes</i> in Bulgaria	4	1	28	—	6	1	—	—	—	—
*+Gallia Narbonensis (<i>CIL</i> only)	9	7	50+	11	23+	5	6	6	15	1
*+ German and other Gallic provs. (<i>CIL</i> only)	67	8	c.347	19	108	15	8	6	27	5
*+Italy: <i>CIL</i> IX and XI (except Regio VIII)	7	12	46+	5	10	37	8	4	19	—
*+Italy: <i>CIL</i> XV	4	7	81+	7	31+	20	97	22	276	7
*+Italy: <i>CIL</i> X (except Sardinia)	6	—	15	5	14	—	2	30	7	23
*+Spain	1	1	4	1?	5	1	6	4(5?)	27+	7
Sardinia	1?	—	—	—	—	2	13	16	27+	15
*N. African provs.	—	1	2	—	1	—	160+	121+	163	104

(continued)

	Atimeti	Cresces	Fortis	Phoetaspī	Strobili	Vibiani	C.Clo. Suc.	C.Iun. Drac.	C. Oppi Res.	Iuni Alexi
Carthage	—	—	1	—	1	—	32	7	14	4
Sabratha	—	—	—	—	—	—	—	26	2	—
Mauretania Tingitana	—	—	1	—	—	—	—	1	10	9

Asterisks denote places where more of these lamps undoubtedly exist, uncatalogued. Daggers denote places where museum holdings of lamps of non-local provenance may have caused some distortion. In counting the above lamps, I have included all variant marks.

Sources: NORTHERN ITALY: *CIL* V, *CIL* XI (for Regio VIII), E. Pais, *Supplementa Italica*, Buchi (1975).²⁹ AQUILEIA: Buchi (1975). SWITZERLAND: Leibundgut (1977). VINDONISSA: *Loeschcke (1919). LAURIACUM: Deringer (1965). PANNONIA: Iványi (1935). VINDOBONA: Neumann (1967). DALMATIAN COAST: Bulić | (1885) and later (see Buchi 1975) (Salona); De Bersa (1905–1915) (Aenona); Abramić and Colnago (1909). DACIA: Gostar (1960), Alicu and Nemeş (1977). BULGARIA: Čičikova (1974). GALLIA NARBONENSIS: *CIL* XII. GERMAN AND OTHER GALLIC PROVS.: *CIL* XIII.³⁰ ITALY (CENTRAL AND SOUTHERN): *CIL* IX, X, XI, XV. SPAIN AND PORTUGAL: *CIL* II, with additional references from Balil (1968a) and Sotgiu (1968). SARDINIA: Sotgiu (1968). N. AFRICAN PROVS.: *CIL* VIII for the first five columns, Sotgiu (1968) for the remainder.³¹ CARTHAGE: Deneauve (1969). SABRATHA: Joly (1974). MAURETANIA TINGITANA: Ponsich (1961).

²⁹ Since ‘C. Clo. Suc.’, ‘C. Iun. Drac.’, ‘C. Oppi Res.’, and ‘Iuni Alexi’ are not found at Aquileia, they are not discussed in Buchi’s catalogue and may be slightly under-reported in line 1 of this table. I know of no lamp with one of these marks and a definitely north Italian provenance, apart from those listed in *CIL* and Pais.

³⁰ But on lamps of non-local provenance registered in *CIL* XIII, see Leibundgut (1977: 41).

³¹ This may mean that the marks in the first five columns have been slightly under-reported, but the number of Firmalampen in North Africa is in any case certainly insignificant.

could also unquestionably be refined, especially if more information were available about the lamps of Italy and the Gallic provinces.

Some statistics illustrating categories III and IV are given in Table 5.1, the purpose of which is to show the relative commonness of various marks, some of them very common, some of them moderately so, in certain selected places. Be it noted that the table does not permit comparisons between the different places listed, unless they are made with extreme caution; this is partly because of the wide divergence in the quality of the printed sources.

Types as well as makers' names are widely distributed. This is as true for the Bildlampen types as for the Firmalampen types: Loeschcke I, for example, is to be found in most parts of the Empire. Unfortunately, since Dressel was the only *CIL* editor who attempted the tedious task of cataloguing the types as well as the marks of the signed lamps for which he was responsible (those of Latium in his case), we cannot yet produce a distribution chart which has even the limited coverage of the one given above. It is obvious, however, that there is a marked difference between Bildlampen and Firmalampen in this respect; while the marks that do appear on Firmalampen virtually never appear on any types other than Loeschcke IX and X (themselves closely related) and their variants, some Bildlampen marks appear on many different types. 'C. Oppi Res.', for instance, is said to appear on no fewer than twelve of the types in Dressel's typology.³² Whether this difference between Firmalampen and Bildlampen means anything remains unclear, but the diffusion of types—pointing to strong interconnections between the centres of manufacture—is an uncontested fact.

There are other variables besides makers' marks and types: colour of clay and quality of manufacture are two obvious ones, though each of them may be hard to judge in any particular case, because of long use and because of what has happened to the lamp since it was discarded.³³ More useful may be size, and also the presence or absence of a handle. More will be said about these two features in the following section.

IMPORTED AND LOCAL PRODUCTS

The concepts 'import' and 'export' do not have unmistakably clear meanings as far as the Roman Empire is concerned. The crossing of a provincial boundary is in itself of little significance. It might be better to speak of 'long-distance' trade, but how are we to define a long distance? The only

³² Balil (1968a: 168). However some of these types were counted by *Loeschcke (1919) merely as variants.

³³ Leibundgut (1975: 104) lists the following criteria for distinguishing workshops: clay, glaze, 'Brand', i.e. presumably intensity of firing, type of handle, carefulness of workmanship, arrangement of vents; but of these features only the handles are really much use at present.

useful response is to keep in mind that many particular objects may be marginal cases in this respect.

It is widely agreed that all the makers' names in category III were originally used in northern Italy, though evidence for the exact whereabouts of specific workshops is naturally limited. The old theory that the original 'Fortis' lamps came from Savignano sul Panaro, near Modena, has a good deal to recommend it, and contrary arguments are ill-founded.³⁴ But Loeschcke's attempts to localize the Celer workshop at Tortona and that of Strobilus | at Magreta, also near Modena, were based on insufficient evidence.³⁵ (The minor—though early and interesting—workshop of Hilario, which Loeschcke located at Parma, has been decisively shown to belong to Bononia.)³⁶ However the North Italian origin of the category III marks is indicated by the simple fact that they are found in the greatest numbers in that region (with Pannonia perhaps the nearest rival). Furthermore we know from the elder Pliny of the export and reputation of the pottery of Mutina;³⁷ and more pottery kilns are attested for Regio VIII than for any other region of Italy.³⁸

The ultimate origin of the makers' marks in category IV is less certain. According to Deneauve, who catalogued the lamps of Carthage, a substantial number of the commonest marks in North Africa, including those in Table 5.1, were scarcely ever made in North Africa at all.³⁹ This is beyond belief, and one of Deneauve's supposedly Italian marks, 'M. Nov. Ius.', was certainly

³⁴ The specific site is argued from an inscription on a tile found there reading 'Ad forn(acem) or (-aces) Cat(...?) L. Aemilii Fortis' (*CIL* XI.6689.12), which is said to have come from a kiln (found or just inferred?) that produced a number of 'Fortis' lamps (Crespellani 1875: 192–5). In addition, some ground in this vicinity was once known as Campo Forte (Crespellani, referring to a *catasto* of 1531). *Chilver (1941: 175) doubted the identification because 'a lamp at Patavium bears the mark ANCHARI FORTIS, suggesting that the name of the makers was not Aemilius at all'. However, *CIL* V.8114.54w is misleading here, and the original report (Devit 1853: 105), besides referring to Rovigo and not Patavium, shows that no such lamp existed (cf. also Zerbinati 1971: 48, 56).

³⁵ (*1919: 491–2 and 390 respectively). His source on the supposed Celer workshop was Varni (1866: 44–7). Even Varni's informant seems only to have seen four of the 400–500 Celer lamps supposed to have been found on the site at Tortona (Dertona) in 1841. There never was any serious evidence for Magreta—in itself a plausible enough site for a lamp workshop—as the home of Strobilus (see Crespellani 1875: 196–8).

³⁶ Gualandi Genito (1973: 265–313), against *Loeschcke (1919: 244).

³⁷ Pliny, *NH* 35.161 (on the subject of pottery): 'habent et Trallis ibi opera sua et in Italia Mutina, quoniam et sic gentes nobilitantur et haec quoque per maria, terras ultro citro portantur, insignibus rotae officinis' ('Tralles too, and in Italy Mutina, have their own products, since nations can be famous even for things like this, and these things too are carried hither and thither by land and sea, so well-known are the potters' workshops'). More will be said about this below, p. 128.

³⁸ Cuomo di Caprio (1971–72).

³⁹ Deneauve (1969: 85) (no argument is offered). This view also seems to be held by *Provoost (1976: 561). Cf. below, n. 48. According to Joly (1974: 97), the earliest marks at Sabratha, in the first century AD, were on lamps imported from Italy, but she does not commit herself to any such opinion with regard to 'C. Oppi Res.', 'Iuni Alexi'. and the other major marks of the second century.

produced in a workshop at Hadrumetum (though it did not necessarily originate there).⁴⁰ The very sketchy published report of this site mentions a number of wasters (faulty rejects), as well as indicating that 'M. Nov. Ius.' was the only mark present.⁴¹ Other scholars have treated this and other category IV marks as North African in origin.⁴² The deplorably small number of lamps that derive from dated archaeological contexts does nothing to settle the issue. The lack of IV lamps at Pompeii and Herculaneum probably results from their not having been made anywhere until after 79. On the whole it is easier to understand the distribution pattern if the lamps were first made in Africa. If they had originated in the vicinity of Rome,⁴³ or (as might be imagined) around the bay of Naples, it would be hard to explain how they ever came to spread, either by export, by branch workshops or by unauthorized imitation, to so many relatively out-of-the-way sites in North Africa. There is also a certain North African flavour to some of the *cognomina* which appear (in abbreviated forms) on the category IV lamps. The question would need a detailed investigation; it might emerge that the whole group of names tended to be particularly common in North Africa (this is true of 'Restitutus'; cf. 'C. Oppi Res.'),⁴⁴ which would favour North Africa as the ultimate origin of the category IV signatures.

Since the time of Loeschcke and Gnirs,⁴⁵ and especially since the former's crucial study *Lampen aus Vindonissa*, it has generally been recognized that many Firmalampen were locally produced in the provinces.⁴⁶ Loeschcke believed that only a small number of the Vindonissa lamps were imported from Italy,⁴⁷ which might imply that most other provincial Firmalampen are also of non-Italian manufacture, since they are found even further from North Italy. This is in fact the view of many scholars. Rostovtzeff still wrote (in 1926) as if Italian exports dominated the provincial markets for a period;⁴⁸ but of

⁴⁰ Deneauve was aware of the Hadrumetum discovery (1969: 86), but asserted the Italian origin of the mark.

⁴¹ Excavation of A. Truillot, reported by Toutain (1941–42: 282–3).

⁴² E.g. Balil (1968a). But attempts to specify the locations of the major North African workshops other than 'M. Nov. Ius.' have not hitherto been well argued. The locations proposed by Carton 1916 are still sometimes cited, but they are entirely unreliable.

⁴³ That 'C. Oppi Res.' lamps were eventually made in great numbers at Rome is not of course in doubt (cf. Mocchegiani Carpano 1977).

⁴⁴ On Restitutus/Restutus as a translation of a Punic name see *Pflaum (1956: 144).

⁴⁵ See in the first place Loeschcke (1909), Gnirs (1910: 82–4).

⁴⁶ Cf. *Gummerus (1916: col. 1470), Hug (1927: col. 1594). In the opinion of *Frank (1927: 224), Loeschcke had 'proved by measurements' that most of the signed lamps with widespread names were produced by local potteries. For a more recent statement see Leibundgut (1977: 75).

⁴⁷ (*1919: 491).

⁴⁸ *Rostovtzeff (1957: 173): 'the factory (or the shops) of Fortis in North Italy, which at first almost monopolized the production of clay lamps, lost its worldwide market in the second century, its products being replaced in the various provinces by local lamps of the same shape, which sometimes even reproduced the Fortis trademark'. His ensuing comments on the lamps found in North Africa (to the effect that in 'the local African markets' Italian lamps were supplanted by lamps made in Carthage, which were in turn supplanted 'by lamps of local

course he might have changed his opinion in the light of later publications, such as Iványi's catalogue of the Pannonian lamps, with its substantial number of Firmalampen moulds. For Rostovtzeff the lamp industry fitted into his overall theory about the decline of the Italian economy in the second century in consequence of the supposed loss of external markets. How much validity this theory possesses, in particular for agricultural products, is an important question which cannot be discussed here.

More surprising than Rostovtzeff's view are the recent judgements of some scholars, including lamp-specialists, to the effect that some quite large proportion of signed lamps was transported over very long distances to be sold. Thus a specialist such as Balil writes as if a long list of marks found on lamps in Spain belonged exclusively to imports, and he evidently considers many, if not all, of the lamps in question to be the products of 'grandes empresas [con] notable capacidad exportadora, situadas generalmente en Italia o en Africa'.⁴⁹ As already mentioned, Deneauve holds that almost every lamp in category IV found at Carthage was imported from Italy, and he presumably would argue that other lamps of the same marks found elsewhere in Africa were also manufactured in Italy.

These are perhaps extreme instances, but many scholars who have published groups of provincial lamps have classified a considerable number of them as imports from Italy, or sometimes, in the case of category IV lamps, as imports from North Africa.⁵⁰ The procedures which have been used to distinguish locally produced lamps from imports from other provincial locations and from Italian imports have generally been unscientific. In effect the normal procedure has been to divide lamps into those of inferior quality, supposedly produced locally, and those of superior quality, supposedly imported.⁵¹ No doubt this leads to some correct results, but control is lacking. How do we know the limits of the provincial potters' skills? And some fairly shoddy Firmalampen were produced in Italy, though the literature has not made this fact easy to appreciate until recently. Some scholars have obviously felt the difficulty of drawing this line between local and imported lamps, but usually they take the plunge.⁵² A notable exception is Ponsich, who, faced with

make', all this before 193) are without foundation. In the first century, according to Bailey (1963: 19, 24), Italian lamps 'were exported all over the Roman world', and this continued to some extent later; indeed most of the lamps in category IV were Italian. Even Leibundgut (1977: 98) writes of a worldwide lamp-trade in the first century.

⁴⁹ Balil (1968a: 159). Going back to a competent earlier work, one reads that the Bildlampen used in Corinth throughout the first century AD were imports from Italy (Broneer 1930: 59).

⁵⁰ Such a tendency can be seen in the works of Gostar (1960), Deringer (1965), Čičikova (1974), as well as in those cited in the preceding notes.

⁵¹ So already *Loeschcke (1919: 494).

⁵² Colour, incidentally, must be used with extreme caution. To suppose that red-brown and brick-red are the colours of lamps made in northern Italy (cf. Bailey 1980: 277) would simply be incorrect.

Table 5.2. Median Lengths of Selected 'Firmalampen' (cm)

	Atimeti	Fortis	Strobili
Aquileia	9.0	9.6–9.7	10.9–11.0
Switzerland	8.5	9.1	10.4
Lauriacum	n.a.	9.35–9.6	n.a.
Pannonia	9.5	8.5	11.0–11.1
Sarmizegetusa	n.a.	8.1	n.a.

Sources: compiled from Buchi 1975 (Aquileia), Leibundgut 1977 (Switzerland) (in this case the measurements ignore the handles which are common on lamps found in the German provinces), Deringer 1965 (Lauriacum), Iványi 1935 (Pannonia), Alicu and Nemeş 1977 (Sarmizegetusa).

the problem of fixing the origins of the signed lamps found in Mauretania Tingitana, refused to pass judgement.⁵³

Size is one criterion which has been invoked to distinguish Italian-made from non-Italian Firmalampen, the latter allegedly being smaller.⁵⁴ But the criterion is of limited value, since the so-called 'imitations' manufactured in the provinces were often not made by a technique which would have turned them out smaller than the originals.⁵⁵ Table 5.2 reflects a sample of the evidence.

These are obviously very partial figures, but while it is clear that sizes do tend to be somewhat smaller in those places, such as Dacia, which were very remote from the original centres of manufacture,⁵⁶ it is obviously impossible to use measurements to distinguish | imported from non-imported lamps in, say, Pannonia. The great majority of Pannonian Firmalampen were without doubt made in Pannonia, but their size does not provide evidence of the fact.

In truth most simple terracotta lamps must have been made near to the places where they were sold at retail. Transport costs alone are enough to make this certain. The distances over which much of the supposed exporting of lamps is said to have taken place are often large, such as from south of the River Po to sites on the Danube and in Spain, or from central Italy to inland sites in Numidia. Such a trade would have been, as Frank realized long ago, economically bizarre.⁵⁷ The raw material for making terracotta lamps was present in virtually every region of the Empire, and the technical skill needed to make basic lamps was not very great (though perhaps greater than was available in some of the European provinces when they were first conquered). It cannot have been profitable to export such items—cheap and easy to produce—over any such long distances, except in special circumstances.

⁵³ Ponsich (1961: 68). And for appropriate caution in face of this problem, cf. Perlzweig (1961: 2).

⁵⁴ Loeschcke (1909: 210), etc.

⁵⁵ Concerning a technique which did have this effect, see below, p. 132.

⁵⁶ The Firmalampen of Novaesium have a median length of only 7.5 cm, *including* 1–2 cm of handle (figures given in Vegas's book).

⁵⁷ *Frank (1927: 224).

It is true that to find specific costs for land transport in the Roman Empire we have to range as far afield as Cato's handbook on farming and the Diocletianic price-edict, and even these sources fail to give us clear and definitely applicable answers.⁵⁸ The whole subject of Roman transport prices deserves a new treatment, which would have to take into account the extensive and problematical evidence of the papyri.⁵⁹ At present it is quite impossible to calculate how far, for instance, one could transport a consignment of lamps over land, or for that matter by sea, without adding 50 per cent to their cost. Any land journey of hundreds of miles would presumably have done this and more, but definite figures are lacking.

The best approach is to consider a concrete situation. The standard price of a terracotta lamp at Pompeii and elsewhere in the early Empire appears to have been a single *as*.⁶⁰ | We might suppose for the sake of example that a consignment of 1,000 lamps, such as might be carried in a single cart or by several pack animals, would produce a profit, with everything paid for except transport, of 150–250 *asses*. Two men and the required animals could scarcely be supported for much less than 15 *asses* a day at Italian prices of the first century AD,⁶¹ and further allowance has to be made for the cost of equipment. There is evidence to suggest that this was about the equivalent of the daily cost of hiring a team of three donkeys in mid-second-century Egypt,⁶² and hence the Italian rate was probably much higher—we might guess 30–40 *asses* a day. The speed of such a convoy is not likely to have averaged more than 25 miles a day. Hence a round trip of 200 miles would probably have made profit impossible. This obviously speculative conclusion can only be rejected if one or more stages in the argument can be invalidated. In practice, lamps are not at all likely to have been carried even 100 miles unless there was an assured market at the other end of the journey, a market

⁵⁸ Specific information about land transport costs: Cato, *De agri cult.* 23; Ed. Diocl. XVII (pp. 148–9, ed. S. Lauffer: 20 *denarii* a mile for a wagon load of 1,200 Roman lb; this is *not* a market price). Modern discussions: *Yeo (1946), *Jones (1955: 163–4 = 1974: 37), *Burford (1960), *Duncan-Jones (1974: 366–9).

⁵⁹ The Egyptian information was formerly collected by *Johnson (1936: 403–7). The main problem is that since Egyptian prices for basic commodities were (in appearance) several times lower than Italian ones (cf. *Schwartz 1978: 169–79), market prices of transport must have been lower too—but how much lower? It is worth noting the following examples: (1) *BGU* III.802 (AD 42): half an *artaba* of lentils for transporting a donkey-load from Theadelphia to Arsinoë—say the equivalent of 12 *asses* for a journey which is 24 km one way; (2) *P.Lond.* I.131 (AD 79): 5 dr. (= 20 *asses*) a day for a wagon carrying sheaves; (3) *P. Oxy.* VII.1049 (late second century): nine donkeys with drivers and loaders cost 29 dr. 1 obol a day, twelve donkeys with drivers and loaders cost 37 dr. 5 obols.

⁶⁰ *CIL* IV.5380 gives 1 *as* as the price of a lamp (if that is what is meant by 'intynium'), type naturally unspecified. *CIL* VIII.10478.1, 22642; XIII.10001.19; *AE* 1940, no. 164, describe lamps with inscriptions such as 'emite lucernas colatas ab asse' (there is some obscurity here also).

⁶¹ For a selection of pertinent prices see *Étienne (1966: 229–33).

⁶² See n. 59.

large enough to be profitable but also backward enough to lack qualified potters of its own.

Even with the much lower costs per ton-mile of sea and river transport,⁶³ export is likely to have been restricted to special circumstances of this kind. Shipping simply from one port to another was not an expensive business, but even in this kind of case the presence of intermediary entrepreneurs is likely to have prevented the producer from making an appreciable profit; the lamps would either have to be sold to a merchant at a discounted price, or the maker might himself lease space on shipboard (for the goods and someone to accompany them).⁶⁴

Further evidence for the production of large numbers of signed lamps far away from their original centres of production is offered by the surviving moulds or *matrices*. Pannonia is the most striking case, having produced at least fifty moulds for the lower halves of Firmalampen in addition to many moulds for the upper halves and for other types of lamps.⁶⁵ No fewer than twelve of the lower moulds bear the 'Fortis' mark, while others have the 'Aprio', 'Cresces', 'Faor', 'Iegidi', 'Lucius', 'Octavi', 'QGC', 'Sexti', 'Strobili', and 'Vibiani' marks, all of which almost certainly originated in northern Italy. Curiously very few moulds for Firmalampen have been found in Italy itself.⁶⁶ The only other published mould for the lower half of a Firmalampe which has a secure provenance is a 'Cresces' mould from Upper Germany (as it happens, from a region where very few 'Cresces' lamps are known).⁶⁷ From the same province we have a model used for making Firmalampen moulds, this one bearing the 'Communis' mark⁶⁸ (a number of similar, but anonymous, models are known from Pannonia and one at least from Noricum).⁶⁹ What matters here is that the Pannonian moulds are so exceedingly numerous—and it is worth pointing out too that they come from widely separated sites within the province—that there must have been very extensive local production.

Of course, some lamps were certainly exported over long distances. This is nicely and unequivocally illustrated by a consignment of some 100 Bildlampen

⁶³ On prices for sea-transport Ed. Diocl. XXXVII (pp. 200-1 ed. S. Lauffer) is the only specific source from outside Egypt (assorted routes priced in *denarii per castrensis modius*). See *Rougé (1966: 369-73). On the Egyptian evidence for river-transport prices see *Johnson (1936: 400-443, 407-8), *Pearl (1952), *P.Oxy.* XLV. 3250 (c.60s AD).

⁶⁴ A certain amount of information on the latter practice can be found in *Rougé (1966: 287-9, 366-8).

⁶⁵ Iványi (1935: 26-7, 310-19), Szentlélek (1959), Balil (1968c), Buchi (1975: 203-4). The lower-half mould of unknown provenance in Prague (with the name 'Iusti') described by Haken (1958: 27) may well be Pannonian.

⁶⁶ One from Fasana (near Pola): Gnirs (1910: 82) (upper half); five from Aquileia, plus some unpublished fragments: Buchi (1975: 203-5) (three lower halves (Cresces), two upper); one once at Vercellae: *CIL* V.8114. 94 ('Mutini'—but this seems quite suspect). In reality, more must exist.

⁶⁷ Leibundgut (1975: 109).

⁶⁸ *Ibid.* 88.

⁶⁹ For the latter see Wiesinger (1922-24: col. 417 (Ovilava)).

of the maker C. Clodius which was found, where it was lost, in a shipwreck in the Balearics, presumably on the way from Italy to Spain, the date being in the 40s AD, early in the history of signed lamps.⁷⁰ Progressive Romanization and urbanization and the prosperity of certain groups clearly increased the market for terracotta lamps in most of the western provinces in the first and second centuries. Whether other factors encouraged the diffusion of lamps can only be a question for interesting speculation. Greater availability of olive oil in areas too cold for the growth of olive trees may have encouraged the use of such lamps, though they could be fuelled with other substances.⁷¹ It is also possible that Firmalampen themselves increased the size of the market by changing hands for lower prices than the lamps previously available.⁷² In some instances Roman lamps were exported to regions beyond the frontiers where there was no local product with which to compete.⁷³ And more important, in many regions of the Empire local production of lamps must have been preceded by a period in which there was a market for imported terracotta lamps. However, though we lack firm chronology for lamp production in most regions, this stage was certainly over by the end of the first century AD not only in Italy but in all the more advanced provinces of the west; the only exceptions are likely to have been Mauretania, the more remote areas of Tarraconensis, and Britain. In these latter areas, such signed lamps as are found may all be imports, even at later dates. An importing area could of course become an exporting area, as must have happened with Pannonia, from which lamps were probably exported after a certain date to Dacia and elsewhere.

Certain other circumstances could make an export trade in lamps natural, if not rational. Lamps from Mutina probably benefited from the reputation of an established trade in other pottery made there. This trade, according to the elder Pliny,⁷⁴ was carried on by land and sea and made Mutina known everywhere. The primary ware in question may not have been lamps but something more refined, *terra sigillata*. But since he was writing in the mid-70s, when Firmalampen production had probably undergone a rapid and fairly recent expansion, Pliny is likely to be alluding also to the export of lamps. It is to be noted that the few extant lamps which state their place of origin all refer to Mutina—but there are only six of them (their provenances are Bologna, Padua, Rimini, Monza, and Vindonissa).⁷⁵

⁷⁰ Domergue (1966).

⁷¹ The importance of olive oil: Leibundgut (1975: 129). Other fuels: Bailey (1963: 10).

⁷² Cf. Deringer (1965: 19).

⁷³ Cf. Gostar (1960: 150–52), Wielowiejski (1970: 62).

⁷⁴ See above, n. 37.

⁷⁵ The marks in question are (1) 'Mut/Cerinthus f.': *CIL* V.8114. 93 (Monza), XI.6699.51b (Rimini), unpublished (Padua: this lamp, which I saw in the Museo Civico in July 1975, has the inventory number XXI-188); (2) 'Mut./Menander/f.': *Loeschcke (1919: no. 855) (Vindonissa), with information about another lamp with a similar mark from the same area and perhaps from

Another possibility is this: if a merchant transporting goods from, for instance, Pannonia to Aquileia found himself without a load of wine or oil for the return journey, and lamps could be acquired at a good price, he may have thought it better to transport them back to Pannonia rather than return with unladen pack-animals or carts. In general, it may be added, transport is likely to have been cheaper on established trade-routes (such as this one).⁷⁶ We have also to reckon with the certainty that some lamps were *neither* imported for trade *nor* locally produced, but were simply carried over some long distance in the luggage of a migrating person such as an official or a soldier.⁷⁷

The problem remains of distinguishing imports from local products object by object. This is far harder to do than most archaeological writers on the subject have recognized, all the more so because at any given place lamps may have been imported from various directions. One local peculiarity which helps is that Firmalampen with handles are evidently for the most part products of the German provinces or of west central Italy,⁷⁸ | but most other regions show no such distinctive differences. Size, as has already been suggested, is less help than many have supposed. Small Firmalampen (say under 7 cm in length) are somewhat commoner in some provinces than they are in Italy or Pannonia, but not to the extent that one can say with any confidence that any particular lamp or group of lamps must have been produced locally.

In theory it might be possible to tell local from imported lamps by laboratory analysis of the clay. Several promising techniques are available (heavy-mineral analysis, optical-emission spectroscopy, etc.),⁷⁹ and some recent work on *terra sigillata* raises hopes. However there are considerable difficulties to be overcome, besides the obvious financial and organizational ones, before such

Vindonissa; (3) 'Mu./Priscus/f.' (apparently): *CIL* XI.6699.163 (Bologna). For some other possible cases see Buchi (1975: 120). The provenances of these six lamps are about 25 miles (Bologna), 70 (Padua), 90 (Rimini), 110 (Monza), and 230 (Vindonissa) from Modena, which may suggest the possible range of exportation; but no conclusions can be drawn, since these lamps are obviously exceptional. [[Nonetheless they show that lamps made at Modena had some cachet.]]

⁷⁶ Cf. *Rougé (1966: 370–71) on the disparities in the tariffs for various sea-routes in Diocletian's Edict. Strabo (4.207) describes the regular trade route from Aquileia to Nauportus (only about 50 miles), from which goods could be moved eastwards by river. The trade route down the east coast of the Adriatic must also have carried north Italian lamps.

⁷⁷ This is likely to account for oddities such as the two Firmalampen from the agora of Athens (for which see Perlzweig 1961: 83); for Miletus see n. 26.

⁷⁸ Vegas (1966: 76): 'Die grosse Mehrheit der [Firma]lampen in den germanischen Provinzen hat einen Henkel aus der Form gepresst und zwei seitliche Knuppen auf der Schulter...'. This is rare elsewhere, except in western central Italy (and Bailey 1980: 277 goes too far in saying that 'central Italian *Firmalampen* normally have handles').

⁷⁹ Cf. *Peacock (1969–70), *Tite (1972: esp. 315–33), *Picon (1973), *Earle and Ericson (1977: 5), *Maggetti and Küpfer (1978) (with other bibliography). *Oertel (1934: 396) was already calling for chemical analysis of the lamps to settle the import question. [[See *G. Schneider and Wirz (1991), *Olcese (1993), *G. Schneider (1993; 2000), and below p. 150.]]

methods will tell us much that is really helpful about the origins of lamps. The first aim would be to decide whether given groups of lamps could or could not have been made within certain areas; whether, for example, the best quality Firmalampen from Lauriacum could or could not have been made in the vicinity of Lauriacum. One problem is that it would be hard to establish the possible range of clays available near Lauriacum (and the discovery that the lamps must have been made more than, say, 20 miles away would not by itself contain much historical interest). Then if the lamps were shown to come from outside this area, there remains the problem of choosing between the possible origins. Furthermore, to show the existence of any significant pattern in the physical composition of 'C. Oppi Res.' lamps—to take an exceptionally interesting case—samples from very many lamps would have to be analysed from a variety of collections in Tunisia, Algeria, Spain, Italy, and elsewhere.

We should return to the patterns of distribution enumerated above (p. 117). Patterns I and II represent respectively the more modest and/or short-lived local workshop and the more successful kind; behind pattern II there may also lie in some cases some subsidiary places of manufacture.⁸⁰ But the important point is that patterns III and IV can only have existed in their denser forms if lamps with the marks in question were produced in many different centres.⁸¹ Wherever substantial numbers of lamps of any given mark are found, most of them are likely to have been made in the vicinity. I take it to be virtually certain that 'Fortis' lamps were made not only near Mutina, but elsewhere in northern Italy, in or near Rome, and at certain sites in the Gallic and German provinces and in Pannonia, Dalmatia, and Dacia; but with this and every other mark the exact number of manufacturing places naturally remains uncertain.

It is tempting to believe that for any well-reported site (and few indeed of these exist), one can tell which are the marks numerous enough to prove local production. At Aquileia, for instance, seven marks are represented by ten or eleven lamps each, whereas only four are represented by six to nine lamps each, and, by contrast, dozens are represented by one to four lamps each. Thus there is a discontinuity in the frequency with which marks are represented at Aquileia; and it might be reasonable to think that in this case the marks that appear ten times or more, which account for 90.4 per cent of the signed Firmalampen of Aquileia, are the ones which were actually made there. Similarly, to take Iványi's figures for Oszöny (Brigetio) as a random example, four marks and their variants account for 55 per cent of the Firmalampen, being represented by thirty-three, twenty, fourteen, and eleven lamps. Afterwards comes a discontinuity, followed by many marks which appear six or

⁸⁰ But for another and perhaps more likely explanation, itinerant sellers, see below, p. 138.

⁸¹ Thin distribution of patterns III and IV may have resulted from export and/or unauthorized imitation.

fewer times. Most of the latter, as of the former, are marks well known elsewhere, and probably few if any of them were made in the immediate vicinity of Brigetio. The four marks ('Cresces', 'Fortis', 'Vibiani', and 'Victor/Victori/Victoris') can plausibly be regarded as local products. But all this of course assumes that each mark tended to be made by a separate workshop. The assumption has often been questioned, and in what follows it will be re-examined. |

IMITATIONS, BRANCHES, AND *INSTITORES*

A feature of Firmalampen which has been cited as evidence against each mark's having been made in a separate workshop are the simple decorations or symbols which are to be found on the bases of a small proportion of them.⁸² Such additional marks appear on 13 per cent of the signed Firmalampen of Aquileia (N = 1,337), to take one example. Most of the marks consist of dots or groups of dots, which might be regarded as not very distinctive. However, some of these additional marks consist of a highly stylized and distinctive crown or crown-and-palm-branch; and there are also a few uniform leaf decorations. The interesting fact about them is that they appear on lamps of several different 'firms'. Crown-and-palm-branch marks, for instance, are found especially on 'Fortis' and 'Octavi' lamps, but also on Aquileian lamps of ten other 'firms'.⁸³ The emblems in question can hardly have been employed by many different manufacturers—they are too distinctive and uniform for that. Surely the moulds for these lamps must all have been made by the same potter or in the same workshop. The same emblems are also known on Firmalampen bases from other sites in northern Italy and elsewhere: there are crown-and-palm-branch lamps from Novaesium, Argyruntum, various Pannonian cities, and Apulum, to take some widely scattered examples.⁸⁴ But the crown-and-palm-branch motif does not appear in random association with 'firm'-names: not only is it especially common on 'Fortis' and 'Octavi' lamps, it appears on 'Cassi', 'Luci/Lucius', 'Neri', and other lamps at more sites than one. A detailed investigation of the phenomenon—not really

⁸² Buchi (1975: xxxvi).

⁸³ See *ibid.* chart 2. The marks are 'Cassi', 'Donatus/Donati', 'Favor/Faor', 'T. Gelli', 'Lucius/Luci', 'Neri', 'Paulini', 'Sextus/Sexti', 'Vetti', and 'Victor'.

⁸⁴ Novaesium: Vegas (1966: 120) (Fortis); she was probably right to judge this a north Italian export. Argyruntum: Abramić and Colnago (1909: col. 74) (2 Fortis). Pannonia: Iványi (1935: nos. 1329–31, 2015–16 (Fortis), 1533–4 (Aprio), 1587, 1589 (Cassi), 2409 (Iegidi), 2516 (Lucius), 2607–10, 3884–5 (Octavi), 3911 ((Sa)turnini), 3958 (Vettii, written 'Vetlii'). Apulum: Băluța (1961) is haphazard on this matter, but the emblem seems to be visible in pl. II/9 (Cassi), VIII/2 (Neri), VIII/7 (Octavi).

possible with the published evidence alone—might be worthwhile. The most likely explanation seems to be that for a time the ‘Fortis’ and ‘Octavi’ concerns, or a single ‘Fortis’ workshop and a single ‘Octavi’ workshop, collaborated. For a period some other ‘firms’, mostly very small, were involved. This collaboration took place in northern Italy, but it resulted in some exports and the export of some moulds (at least to Pannonia). Such collaboration between workshops is readily understandable, and something similar is known to have taken place among the *terra sigillata* potters of Lezoux.⁸⁵ It would certainly be a mistake to infer from these decorative marks that Fortis and Octavi were not, most of the time, separate concerns. Of the 342 ‘Fortis’ lamps known from Aquileia, only twenty-seven (8 per cent) exhibit varieties of the crown or crown-and-palm-branch motifs.

Also problematical are the decorative elements to be found in the bowls of some Fimalampen. They appear in about 10 per cent of the Aquileian lamps.⁸⁶ But since these decorations are rather more varied, and yet individually, in most cases, not very distinctive, it is difficult to suppose that they denote the manufacturer in any way.

However, most scholars suppose the great majority of the locally produced signed lamps were *unauthorized* copies produced by independent manufacturers, who, benefiting from the lack of protection for trade-marks,⁸⁷ by one means or another imitated the design of lamps which had originally been made by the workshops of Cresces, Fortis, Vibianus, and so on. The simplest technique would have been to make a ‘secondary’ mould directly from the lamp one wished to imitate. It is suggested that the potters who made the imitations used lamps, and moulds and models of lamps, without any regard for the marks; in fact it is now almost an article of faith in some quarters that the names on Fimalampen tell us nothing about the proprietors of the workshops where the lamps were actually made.⁸⁸ ‘Die Töpferstempel bezeichnen meist nicht die Fabrikanten.’⁸⁹ |

But the positive arguments in favour of this position are decidedly shaky. The fact that locally made Fimalampen are sometimes imperfect copies, with mis-spelled names for example, does not show that the lamps in question were unauthorized.⁹⁰ Fimalampen potters who mis-spelled names (which was quite a rare occurrence) or wrote them with variant ligatures showed in fact that they were not using the simplest copying technique; on the contrary, such a workman showed that he had a specific motive for putting a particular name, say ‘Vibiani’, on his lamp, and the motive was probably, in most cases, simply that he was working for the Vibianus concern.

⁸⁵ See Vertet et al. (1972: 275, 277).

⁸⁶ See Buchi (1975: 221–4). Most of these decorations consist of theatre masks or other busts. Buchi records 26 types at Aquileia.

⁸⁷ *Frank (1927: 224).

⁸⁸ Cf. Leibundgut (1977: 75), *Provoost (1976: 560–61).

⁸⁹ *Loeschke (1919: 261).

⁹⁰ As suggested by *Panciera (1957: 40).

Several considerations tell against the likelihood that a large proportion of signed lamps were unauthorized imitations. In the first place, lamps made from secondary moulds which were themselves in turn made from lamps ought, as has already been mentioned, to be smaller than the original lamps, and further descendants ought to shrink progressively in size. This does seem to have happened to some extent in some outlying areas, but in the total of surviving Firmalampen it is a rare phenomenon. It is in any case possible that the technique envisaged was used not only by unauthorized imitators but in the branch workshops.

The initial spread of the makers' marks also requires attention here. How did Firmalampen come to be present in so many areas in the first place? Why did the marks of category IV spread across the Mediterranean? Three processes can be distinguished. In some cases entrepreneurs transported lamps to places where demand was growing and competent potters were not available. This, however, conspicuously fails to explain the arrival of signed lamps in rather advanced areas such as Baetica, Narbonensis, Italy, Sicily, and Africa Proconsularis. By the time Firmalampen began to spread very widely, terracotta lamps can hardly have seemed ingenious novelties in any except the most primitive parts of the western Empire.

Secondly, some of the diffusion must have been owed to legionary soldiers,⁹¹ who were in the first century the most numerous migrants from Italy and the advanced provinces to frontier regions. At Vindonissa in the Flavian period the legionary camp was occupied by XI Claudia, the majority of whose recruits came from northern Italy.⁹² These legionaries probably brought some Italian lamps with them, and probably purchased some more after they arrived from traders attracted by the massed buying power which a legion represented.⁹³ A similar case might be the XIII Gemina in Dacia. When the province was new, it was stationed at Apulum, the origin of a high proportion of the Firmalampen found in Dacia.⁹⁴ Before Trajan's Dacian wars it had been stationed in Pannonia, where Firmalampen were by then common possessions. But the role of soldiers' migrations in the diffusion of signed lamps must not be exaggerated: XI Claudia was an exceptionally Italian legion at the crucial period, and the movements of soldiers do very little to explain either the diffusion of signed lamps in areas such as Narbonensis, where no legions were stationed, or indeed any of the diffusion of marks in category IV.

The third process we need to consider is the establishment and functioning of branch workshops. Their role in the lamp industry has not previously been

⁹¹ This factor has been emphasized by Leibundgut (1977).

⁹² *Forni (1953: 229–30). The legion arrived there in 70, having previously served in Dalmatia. It was preceded at Vindonissa (since early in Claudius' reign) by XXI Rapax, which also drew some recruits from Italy (but in what proportion is scarcely known; cf. Forni p. 234).

⁹³ On this aspect of legionary encampments cf. *Wilkes (1969: 217).

⁹⁴ See Băluța (1961; 1965).

discussed in any detail. According to Balil, the existence of such branches ‘sólo se documenta hoy adecuadamente en el area danubiana singularmente en su sector nórico-panónico’.⁹⁵ The documentation alluded to presumably consists of the surviving moulds of Firmalampen, most of which, as already noted, come from Pannonia. But this fact is not very significant for the existence of true branch workshops, since such moulds scarcely exist in northern Italy itself, and the Pannonian ones *might* in fact have belonged to unauthorized imitators.

Branches set up by substantial lamp-making firms would normally be operated by skilled potters, who might bring moulds with them but would be capable of making new ones, and hence would have no strong propensity to turn out undersized lamps. Such potters could be sent wherever a market came into being, and hence they can account for the known patterns of distribution. One type of market would be any legionary encampment, and ample evidence is available that various legions and their camp-followers bought enough to keep skilled potters in business.⁹⁶

Some Firmalampen signatures, particularly of large firms such as Fortis and Strobilus, occasionally include single letters below the firm name. Thus we meet ‘Fortis/I’, ‘Fortis/N’, ‘Fortis/A’, and at least four other letters used in the same way.⁹⁷ The Gallic firm ‘L. Hos. Cri.’, mentioned earlier, was particularly prone to the use of such letters. They certainly look like self-identifying signs added by branches; but outside the ‘L. Hos. Cri.’ firm these lamps are relatively few, and any interpretation of them is much too uncertain to be of any use.

It is highly significant that the firm of Strobilus, which originated beyond reasonable doubt in northern Italy, had what appears to have been a branch workshop at Lugdunum, which produced both lamps and other kinds of pottery; at least all the lamps found on the site were ‘Strobili’ lamps.⁹⁸

But what is of crucial importance is the fact that Roman society and law provided the framework on which a system of branch workshops could be built. Archaeological discussions of the lamp industry have neglected the non-archaeological evidence concerning the behaviour of Roman artisans and businessmen.⁹⁹ In reality it was common practice to set up branch businesses, mainly under the management of slaves or freedmen. The well-to-do habit-

⁹⁵ Balil (1968a: 159 n. 5).

⁹⁶ See *Vegas (1973: 157 n. 378). Fremersdorf (1922: 78) catalogued the lamps and other ceramics then known with inscriptions referring to legions. Cf. also von Bülow 1975 (on *terra sigillata*).

⁹⁷ Buchi (1975: 65).

⁹⁸ Unfortunately the number of lamps is not specified by Bailly (1962: 118), and A. Comarmond, *Description des antiquités... du Palais-des-Arts de la ville de Lyon* (Lyon, 1855–7), 92–7, which seems to have been his ultimate source, leaves it ambiguous between one and a whole group. What may have been a workshop of ‘C. Oppi Res.’ at Emerita is described by Barrantes (1877: 16–34).

⁹⁹ With the exception of the interesting discussion by *Carandini (1970: esp. 116–19).

ually lent money to freedmen—generally their own freedmen of course—for the latter to use in commercial enterprises.¹⁰⁰ For this, the investor had to feel great confidence in the freedman's ability and integrity. A less risky mechanism, though it required more supervision, was to appoint *institores*.

An *institor* was essentially a manager or agent who ran an enterprise which remained the property of the principal. 'Institor est qui tabernae locove ad emendum vendendumve praeponitur quique sine loco ad eundem actum praeponitur', wrote the jurist Paulus.¹⁰¹ Such a manager or agent could be one of the principal's own slaves, or a slave belonging to someone else, or a free man.¹⁰² Legal writers seem to have broadened the word somewhat: 'cuicumque igitur negotio praepositus sit, institor recte appellabitur', Ulpian is quoted as writing with a long list of examples.¹⁰³ In ordinary speech, the commonest use of the word was probably for the manager of a *taberna*,¹⁰⁴ but the latter term was itself wide enough to include shops of many kinds (the temptation to give the word its modern Greek or Italian meaning should be resisted).

What matters most is not really the usage of the word *institor* but the prevalence of certain commercial customs and legal rules. However, books on Roman economic life, with the exception of Shterman and Trofimova's,¹⁰⁵ have paid less attention to *institores* than they should have done. The chapter of the *Digest* which is devoted to the *institoria actio* (for obvious reasons the relationship of owner to *institor* gave rise to extensive legal complications)¹⁰⁶ incidentally makes it clear that the institution was very widespread. The lack of

¹⁰⁰ The classic text is Petronius, *Sat.* 76, where Trimalchio, now a landed proprietor, is made to say, 'sustuli me de negotiatione et coepi libertos faenerare', 'I removed myself from business and began to lend money at interest to freedmen'. *Veyne (1961: 239) supplies the context, pointing out the frequency with which the fortunes of the elite are described as consisting of lands and 'nomina debitorum'. Also relevant is the *actio de in rem verso* (dealt with in *Dig.* xv.3), which was based in part on the fact that slaves and freedmen independently made profits for their masters.

¹⁰¹ 'An *institor* is a man who is put in charge of a shop or any other place for the purpose of buying and selling, or is put in charge of such actions without a particular location': Paulus, *Dig.* xiv.3.18; cf. Gaius, *Inst.* iv.71. There is always someone 'qui institorem praeponit' (Ulpian, *Dig.* xiv.3.1; cf. 3.5.11, etc.), sometimes referred to as the *dominus* (e.g. xiv.3.5.15).

¹⁰² Ulpian, *Dig.* xiv.3.1, Gaius, loc. cit. The *institor* may be itinerant (Paulus in *Dig.* xiv. 3.4 and 18), but evidently this is not the common situation (Ulpian in *Dig.* xiv.3.5).

¹⁰³ 'Therefore whatever kind of business he is put in charge of, he is rightly called an *institor*', *Dig.* xiv.3.5.pr.

¹⁰⁴ Ulpian in *Dig.* xiv.3.3; cf. Gaius, loc. cit. ('quia qui tabernae...'). OLD misleadingly translates 'a small retailer, a shopkeeper, pedlar, or sim.'. The technical meaning is clear from the legal writers, and from it arose the contemptuous use of the word to refer to shopkeepers. A number of texts cannot be fully understood unless the technical meaning of *institor* is borne in mind: e.g. Cicero, *Phil.* ii.97, Valerius Maximus vi. 1.6.

¹⁰⁵ *Shterman and Trofimova (1975). On *institores* see pp. 76–80, as corrected by *Serrao and di Porto (1977: 238). See also *Klingmüller (1916). [[The definitive treatment is *Aubert (1994).]]

¹⁰⁶ The legal bibliography can be traced through *Burdese (1973).

explicit evidence for *institores* in ceramics production is of no significance: most of the legal texts deal either with *institores* in general or with those whose classification as *institores* might be unclear. They are explicitly attested in other kinds of production.¹⁰⁷ Moreover, it is certain that *institores* could be set up in places far removed from the principal's home base. As a matter of course a principal probably resident in Italy could have an *institor* at Arelate,¹⁰⁸ and a provincial principal could have an *institor* in the capital.¹⁰⁹ A branch business in the hands of an *institor*, unlike one which actually belonged to a freedman, had the advantage (from the proprietor's point of view) that it did not pass by stages out of the owner's hands with the progressive stages of economic emancipation that followed after manumission.¹¹⁰ Finally it is worth observing that the institution was already—so it seems—well known by the time of the late republican jurist Ser. Sulpicius Rufus.¹¹¹

To some extent a parallel arrangement is visible in the *terra sigillata* industry. The discovery that the Ateius workshop of Lyon had what must have been a 'parent' workshop at Arretium¹¹² suggests that the former may originally have been operated as a branch;¹¹³ and Oxé long ago argued that several branches of Arretine workshops were set up in Gaul and Germany in the first two decades AD.¹¹⁴ But it will readily be admitted that we still have much to learn about the organization of *terra sigillata* production.¹¹⁵

It is evident that Firmalampen were made according to simplified and standardized designs to meet the needs of quick production and semi-skilled labour. This simplification and standardization favoured the setting up of branch workshops far away from the supervision of the master craftsman. The *institores* themselves will presumably have been skilled men, but in the more backward provinces at least they probably had difficulty in obtaining suitable slaves for skilled work. For a Firmalampe this was scarcely necessary.

¹⁰⁷ Cf. *Dig.* xxxii.9.2.

¹⁰⁸ Ulpian in *Dig.* xiv.3.13. pr.

¹⁰⁹ Idem in *Dig.* v.1.19.3.

¹¹⁰ On freedmen's wills see esp. *Treggiari (1969: 78–80).

¹¹¹ Cf. Ulpian in *Dig.* xiv.3.5.1.

¹¹² Maetzke (1959).

¹¹³ *Vertet (1967: 286), *Picon et al. (1972–73) (this article also gives information on an unpublished Ateius workshop at Pisa; the authors suggest (pp. 130–31) that the Pisa and Lyon workshops were geared to make profits from specific markets, that at Pisa aiming at export by sea); *Vauthey and Vauthey (1973: 121–2). [[For further discussions of the organization of *terra sigillata* production see the addendum.]]

¹¹⁴ *Oxé (1943: esp. 62–6); cf. *Oxé (1933: 36). This is largely accepted by *Comfort (1973: 814–15). For a careful but inconclusive discussion of this problem with regard to another body of material see *Bémont (1976: 196–202).

¹¹⁵ *Wells (1977: 136) has hypothesized that much of the distribution was in the hands of 'independent middlemen' who sometimes appear in inscriptions as *negotiatores artis cretariae*.

The localization and enumeration of branch firms requires much more work both on theory and on cataloguing than has taken place so far. But it is clear that if the view put forward in this article is broadly correct, the largest lamp firms, such as those which used the 'Cresces', 'Fortis', 'Strobili', 'Vibiani', and 'C. Oppi Res.' marks, had branches in considerable numbers. Fortis, to take the extreme instance, will have had more than one branch both in northern and in central Italy, in Gaul, in Germany, and in Pannonia,¹¹⁶ and probably branches in Dalmatia and Dacia. A total between twenty and thirty (not necessarily all active at once) would not be surprising. 'C. Oppi Res.' will have had at least one branch in Gaul, one in Sardinia, at least one in Spain, at least one in the neighbourhood of Rome, and several in North Africa.

Many different factors combined to produce distribution of types III and IV. They can perhaps be distinguished most clearly in the case of those numerous marks of type III which are spread over very large areas without being overwhelmingly common on any particular site. 'Phoetaspi' can serve as an example (cf. Table 5.1), though it is not a perfectly typical one because the name appears on some lamps of non-Firmalampen type,¹¹⁷ and because there seems to have been a branch in Egypt.¹¹⁸ It is fairly typical, however, that the following non-Italian, non-Egyptian provenances are known for 'Phoetaspi' lamps:¹¹⁹ Cazères (Haute-Garonne), Lectoure (Gers), Garrigues (Gard), Arelate, Arausio, Arausio or Vasio, Vienne (2), Lyon (3), Vichy, Cologne (2), Trier, Vindonissa (10), Salzburg, Sopron, Krk, Emona (5), Poetovio (2), Aenona (15), Salona. The inference is plausible that there was a branch workshop in the lower Rhône valley and at least one somewhere beyond the north-eastern frontier of Italy, as well as production in Italy itself.

Several points need to be made about this distribution. First of all, these lamps represent a minute percentage of the 'Phoetaspi' lamps that once existed. Aenona, Vindonissa, and Aquileia (10) are the sites which have produced the largest numbers, but that may be insignificant. Some of the distribution could be explained as exportation, since it is so thin and found along known trade routes; there may also have been unauthorized imitation. The whole question of how long the Phoetaspi business remained active is, as with most other marks, still subject to investigation; perhaps not very long. It

¹¹⁶ 'Fortis' moulds have been found on at least four sites in Pannonia (Iványi 1935: 316). In Gaul, 'Surillus' moulds have been found both at Lezoux and at Vichy (Leibundgut 1977: 77), sites only some 20 miles apart.

¹¹⁷ Cf. Buchi (1975: 134).

¹¹⁸ I have not attempted to collect the evidence for 'Phoetaspi' lamps from Egypt, but two in the British Museum (Walters 1914: no. 613, and another referred to by Bailey 1980: 276), one in the Ashmolean (ibid. 277), one in the Hermitage (Waldhauer 1914: no. 176), and two in Berlin (Heres 1972: nos. 110, 228) have this provenance. [[The distribution of many Egyptian lamps seems to follow pattern II: see *Alston (1998: 177) on Karanis.]]

¹¹⁹ Most of this information is derived from Buchi (1975: 135). The Spanish origin of the lamp(s) mentioned by Alvarez-Ossorio (1942: 278) appears uncertain.

is likely that those who made lamps of any particular mark also made pottery of other kinds, and hence did not need to produce huge numbers of lamps in order to survive.¹²⁰ The same establishment on the 'Via di Nocera' at Pompeii evidently contained both an *osteria* and space for making and for selling terracotta lamps.¹²¹

Most important in this context is the likely role of itinerant sellers of lamps. 'In most peasant societies, markets are periodic rather than permanent and continuous... because the *per capita* demand for goods sold in the market is small, the market area is limited by primitive transport technology, and the aggregate demand is therefore insufficient to support permanent shops. Businessmen adjust by visiting several markets on a regular basis...'.¹²² This is undoubtedly applicable to the less urbanized parts of the Roman Empire, and helps to account for the 'thin' distribution of many lamp-makers' signatures over so many minor sites.¹²³ Many provincials will have obtained their lamps, like Aladdin, from a travelling lamp- or pottery-merchant, who will however have visited their communities not from Italy but from some provincial centre near by.

Finally, it hardly needs repeating that signed lamps represent only part of the Roman world's terracotta lamp production, though a large part. Widespread diffusion of types suggests, however, that branch workshops may also have played an important part in the production of unsigned lamps. |

CHRONOLOGY

Of the tens of thousands of known signed lamps, very few come from narrowly datable archaeological contexts. In this section I aim to identify the extreme chronological limits of signed-lamp production, distinguishing between categories III and IV (see above, p. 118) but not between individual

¹²⁰ On the 'Hilario' workshop at Bononia see Gualandi Genito (1973). Similarly with the 'M. Nov. Ius.' workshop at Hadrumetum (see n. 41). The box which contained most of the 'Strobili' lamps found at Pompeii (24 of them) contained 13 other Firmalampen, together with 90 bowls (Atkinson 1914: 27) with a number of different makers' stamps. All the lamps seem to have been unused, so presumably all these wares had been assembled for sale. Buchi lists references to surviving pieces of *terra sigillata* which show names well known in lamp-manufacturing, such as Atimetus, Fortis, and Iegidius (pp. 11, 70, 108).

¹²¹ Cerulli Irelli (1977). The complete absence of signatures from the 61 lamps found is of interest.

¹²² *Berry (1967: 93).

¹²³ On periodical markets see *MacMullen (1970) (with interesting provincial evidence), *Gabba (1975) (it is curious that the famous fair at the Campi Macri near Mutina seems to have declined a few years before the major production of Firmalampen in that area began; cf. p. 157).

firms. And I shall not make any concerted attempt—it would be premature—to trace in detail the geographical development of the lamp industry.

Certain workshops were already turning out signed lamps in Augustus' time: 'C. Vibi/Tibur' lamps and the workshop of Hilario at Bononia have already been mentioned. Recently some have also attempted to push the beginning of Firmalampen production back to the same period. The traditional reference point for this event has been Pompeii, where Firmalampen appear in relatively restricted numbers.¹²⁴ Hence they have been thought to be a novelty of the 70s. But the argument is fallacious, since Firmalampen never came to be dominant in southern Campania, and the proportion of Firmalampen on the two sites overwhelmed in 79 is perfectly consistent with a beginning for Firmalampen production many decades earlier.

But an Augustan or Tiberian date is probably too early. Buchi has argued in detail that Firmalampen were made from the beginning of the first century, on the grounds that a number have been found in association with, usually in fact in the same tomb as, Augustan or Tiberian (as well as Caligulan or Claudian) coins.¹²⁵ Some twelve instances are cited for Augustus alone. The argument is illusory, however, since coins only give a tomb a *terminus post quem* and Roman imperial coins often stayed in circulation for periods which in modern society (with efficient central banks) would be impossible. This is nicely illustrated, for example, by those four tombs in the recently published northern cemetery of Emona (Ljubljana) which contain more than one coin. A coin of Vespasian was in circulation at least as late as the reign of Carus, another at least as late as Septimius Severus; a coin of Nerva lasted at least until Constantine.¹²⁶

Against an early date it is usual to cite the absence of Firmalampen from the pre-Vespasianic strata of Hofheim, but this does not show decisively that production had not started in Italy or some other areas. In fact the most important site is the Magdalensberg, to which a closing date in the last years of Claudius' reign is normally assigned.¹²⁷ Some Firmalampen have been discovered there, but in some cases (three out of nine) they are more ornate than the later standardized Firmalampen, and no single example has a firm-name on the base.¹²⁸ Given the proximity of the Magdalensberg to Italy and the quantity of material found there, this suggests that the firms which later became well known only started production at the earliest a few years before 50 AD. They will have spread early to sites in Italy and probably to Emona,

¹²⁴ Of the more than 5,000 lamps at Naples (largely from Pompeii and Herculaneum), 274 are Firmalampen (Pavolini 1977: 38; the author believes it is easy to tell the local products from the imports from the valle Padana, but he does not establish the point).

¹²⁵ Buchi (1975: xxix–xxxiii). His opinion is reported incorrectly by Bailey (1980: 274).

¹²⁶ Single burials are involved in each case. See Plesničar-Gec (1972: tomb nos. 187, 274, and 225) for the evidence in question.

¹²⁷ Cf. Leibundgut (1977: 43).

¹²⁸ Farka (1977: 78–86).

Poetovio, Lugdunum and Baeterrae (Béziers), the only places where they are attested in association with coins minted before 37. We can most plausibly imagine this happening in the 50s and 60s. But no doubt the process of capturing the provincial markets continued throughout the last third of the first century and beyond.

The end of Firmalampen production is also hard to date. A pottery workshop which produced Firmalampen at Aquincum may apparently still have been in operation under Gordian III,¹²⁹ and a few well-dated specimens from Lauriacum belong to the period 230/5–270.¹³⁰ According to Buchi, they went on being produced until the late third or even the fourth century.¹³¹ However the evidence for post-Severan production is not extensive. There was undoubtedly some, and a few lamps can be cited from contexts containing coins of the tetrarchs, of Constantine, and even of Magnentius, Constantius II, | and Valens.¹³² A full discussion, taking into account regional developments, would require more information than is available in print. But it is clear that the only major firm which may have continued production into the first years of the fourth century is that of Cresces;¹³³ if it did so, it was probably at Emona.

Lamps in category IV are totally absent from Pompeii and Herculaneum, and can only have come into serious production after 79. A recent discussion concluded that all the earliest datable finds of 'tria nomina' lamps (i.e. lamps of this category) belonged to the early second century.¹³⁴ At the other end of the scale, the standard view seems to be that the activities of most of the category IV producers concluded before the end of the second century, with a few ('L. Cae. Sae.', 'C. Iun. Bit.') active in the third century.¹³⁵ The production of relatively large firms disappeared at some date placed vaguely in the mid-third century, with the marks of the late third and fourth centuries enjoying only local circulation.¹³⁶

¹²⁹ Szentlélek (1959: 181).

¹³⁰ Deringer (1965: nos. 18, 22 (cf. 21), 23, 126, 245, 265), plus some other anonymous examples.

¹³¹ Buchi (1975: xxxii).

¹³² In Petru (1972) tombs 671, 513, and 1543 have coins of these last three emperors, as well as a 'Cresces', a 'Fortis', and another 'Cresces' lamp respectively. The 'Cresces' lamp (Deringer 1965: no. 178) is dated by him after 375. His dating of isolated examples (nos. 279 ('Comuni'), 280 (anon.)) to the fifth or sixth centuries should be regarded sceptically.

¹³³ See the references given by Buchi (1975: 34). Add Plesničar-Gec (1972: tomb 115).

¹³⁴ Leibundgut (1977: 31–3, 40–41), referring (not with complete precision) to finds at Ampurias (though in fact the lamp fragments in question belong to Level II, dated to AD 130–200: see Almagro and Lamboglia 1959: 10, 24), Ostia (in a level of the Trajanic-Hadrianic period according to Salone 1973: 397), Libarna (where such lamps were found with lamps of Loeschcke type X, usually dated after AD 100: Guasco 1952: 218–19, but much is indefinite here), and Tipasa (a less valuable indication: the Hadrianic coin found on this lamp may have been far from new) (Lancel 1962–65: 61).

¹³⁵ Cf. Bailey (1963: 24).

¹³⁶ Cf. Joly (1974: 98).

CONCLUSIONS

Some names of makers of terracotta lamps had an enormously wide diffusion in the first to third centuries. In particular two major groups of names can be distinguished, one (designated III in the above discussion) which originated in Northern Italy and had a primarily 'northern' diffusion; the other (designated IV) which may have originated in central Italy but more probably in North Africa, with a 'southern' diffusion. The two groups overlap mainly in the German provinces, in Narbonensis and in the vicinity of Rome.

Long-distance trade in terracotta lamps is unlikely to have taken place on a significant scale, except for short periods when they were a novelty in any given area. Transport costs, especially the costs of land transport, were too high for this to be a rational form of economic behaviour, except in unusual circumstances. Most of the signed lamps found in areas away from the original places of manufacture were in fact made locally.

Some of these locally produced lamps were no doubt unauthorized copies; but the arguments for explaining the majority of them in this way are weak. A major part of the diffusion is rather to be explained by the use of a Roman institution well adapted to lamp production—the *institor* or manager of a branch enterprise. The larger 'firms' are likely to have created a number of such branch workshops at strategic places far away from their original sites.

Bibliographical appendix: publications on lamps and related material referred to in this paper¹³⁷

- Abramić, M., and A. Colnago (1909). 'Untersuchungen in Norddalmatien', *JÖAI* 12, Beibl. cols 66–75.
- Alicu, D., and E. Nemeş (1977). *Roman Lamps from Ulpia Traiana Sarmizegetusa*, British Archaeological Reports, Supplementary Series 18 (Oxford).
- Almagro, M., and N. Lamboglia (1959). 'La estratigrafía del decumano A de Ampurias', *Ampurias* 21, 1–24.
- Alvarez-Ossorio, F. (1942). 'Lucernas o lamparas antiguas, de barro cocido, del Museo arqueológico nacional', *Archivo español de arqueología* 15, 271–87.
- Anti, C. (1912–14). 'Le lucerne romane di terracotta conservate nel Museo Civico di Verona', *Madonna Verona* 6, 181–94; 7, 6–34; 8, 99–116, 207–15.
- Atkinson, D. (1914). 'A Hoard of Samian Ware from Pompeii', *JRS* 4, 27–64.
- Bailey, D. M. (1963). *Greek and Roman Pottery Lamps* (London).

¹³⁷ [[A bibliographical appendix attached to the original article is omitted]].

- Bailey, D. M. (1975). *A Catalogue of the Lamps in the British Museum I: Greek, Hellenistic and Early Roman Pottery Lamps* (London).
- (1980). *A Catalogue of the Lamps in the British Museum II: Roman Lamps Made in Italy* (London).
- [(1988). *A Catalogue of the Lamps in the British Museum III. Roman Provincial Lamps* (London).
- (1996). *A Catalogue of the Lamps in the British Museum IV. Lamps of Metal and Stone, and Lampstands* (London).]]
- Bailly, R. (1962). 'Essai de classification des marques de potiers sur lampes en argile dans la Narbonnaise', *Cahiers ligures de préhistoire et d'archéologie* 11, 79–127.
- Balil, A. (1966). 'Materiales para un indice de marcas de ceramista en lucernas de fabricación hispanica', *Pyrenae* 2, 117–23.
- (1968a). 'Marcas de ceramista en lucernas romanas halladas en España', *Archivo español de arqueología* 41, 158–78.
- (1968b). *Lucernae singulares* (Brussels).
- (1968c). 'Forme di lucerne romane con segnatura di ceramista', *Apulum* 7.1, 461–4.
- (1969). *Estudios sobre lucernas romanas I* (Santiago de Compostela).
- Băluța, C. L. (1961). 'Opatele romane de la Apulum (I)', *Studii si Comunicari, Arheologie-Istorie-Etnografie* (Alba Iulia) 4, 189–220.
- (1965). 'Opatele romane de la Apulum (II)', *Apulum* 5, 277–95.
- (1975). 'Lucernae singulares Apulenses', *Arheolski Vestnik* 26, 111–14.
- Barrantes, V. (1877). *Barros Emeritenses* (Madrid).
- Bisi Ingrassia, A. M. (1977). 'Le lucerne fittili dei nuovi scavi di Ercolano', in Carandini (1977: 73–104).
- Broneer, O. (1930). *Terracotta Lamps* (Corinth 4.2) (Cambridge, MA).
- (1977). *Isthmia III : The Terracotta Lamps* (Princeton).
- Bruneau, P. (1965). *Exploration archéologique de Délos*, fasc. 26: *Les lampes* (supplemented in *BCH* 102 (1978), 161–6).
- Buchi, E. (1975). *Lucerne del Museo di Aquileia I* (Aquileia).
- (1976). 'Firmalampen e anfore "istriane" del Museo Romano di Brescia', in *Atti del Convegno Internazionale per il XIX centenario del Capitolium* (Brescia), 2.217–57.
- Bulić, F. (1885). 'Descrizione delle lucerne fittili... nell' i.r. Museo di Spalato', *Bullettino di archeologia e storia dalmata* 8, 127–9, continued in the same periodical down to 1923 (full references in Buchi 1975).
- Bülów, G. von (1975). 'Militärische und Zivile Keramikproduktion in den römischen Provinzen am Rhein und an der oberen Donau', *Klio* 57, 233–40.
- Carandini, A. (ed.) (1977). *L'instrumentum domesticum di Ercolano e Pompei nella prima età imperiale* (Quaderni di cultura materiale 1) (Rome).
- Carton, L. (1916). 'Les fabriques de lampes dans l'ancienne Afrique', *Bulletin de la Société de géographie et d'archéologie d'Oran* 36, 61–103.
- Cerulli Irelli, G. (1977). 'Una officina di lucerne fittili a Pompei', in Carandini (1977: 53–72).
- Čičikova, M. (1974). '"Firmalampen" du limes danubien en Bulgarie', *Actes du IXe Congrès International d'études sur les frontières romaines* (Bucharest), 155–65.
- Crespellani, A. (1875). 'Di alcune fornaci dell'agro modenese', *Bullettino dell'Istituto di corrispondenza archeologica*, 192–200.

- Cuomo di Caprio, N. (1971–72). 'Proposta di classificazione delle fornaci per ceramica e laterizi nell'area italiana, dalla preistoria a tutta l'epoca romana', *Sibrium* 11, 443–57.
- De Bersa, G. (1905–15). 'Le lucerne fittili romane di Nona conservate al Museo archeologico di S. Donato di Zara', *Bullettino di archeologia. e storia dalmata* 28 (1905), 170–76; 29 (1906), 80–83; 38 (1915), 75–83.
- De Caro, S. (1974). 'Le lucerne dell'officina LVC', *RAAN* 49, 107–34.
- Deneauve, J. (1969). *Lampes de Carthage* (Paris).
- Deringer, H. (1965). *Römische Lampen aus Lauriacum* (Linz).
- Devit, V. (1853). *Le antiche lapidi romane della provincia del Polesine* (Venice).
- Domergue, C. (1966). 'Un envoi de lampes du potier Caius Clodius', *Mélanges de la Casa de Velazquez* 2, 5–40.
- Farka, C. (1977). *Die römischen Lampen vom Magdalensberg* (*Kärntner Museumschriften* 61) (Klagenfurt).
- Fischbach, O. (1896). 'Römische Lampen aus Poetovio', *Mittheilungen des Historischen Vereins für Steiermark* 44, 3–64.
- Fremsdorf, F. (1922). *Römische Bildlampen* (Bonn).
- Gnirs, A. (1910). 'Eine römische Tonwarenfabrik in Fasana', *Jahrbuch für Altertums-kunde* 4, 35–9.
- Gostar, N. (1960). 'Inscriptiile de pe lucernele din Dacia Romana', *Arheologia Moldovei* 1, 149–209.
- Gualandi, M. C. (1977). *Lucerne fittili delle collezioni del Museo Civico Archeologico di Bologna* (Bologna).
- Gualandi Genito, M. C. (1973). 'Una fabbrica di fittili nella Bononia augustea: l'officina di Hilario', *Atti e Memorie della Deputazione di Storia Patria per le Province di Romagna* n.s. 24, 265–313.
- Guasco, M. (1952). 'Libarna', *Not.Sc.*, 211–23.
- Haken, R. (1958). *Roman Lamps in the Prague National Museum and Other Czechoslovak Collections* (Prague).
- Hatt, J.-J. (1954). 'Les fouilles de Strasbourg en 1953 et 1954', *Gallia* 12, 323–43.
- Heres, G. (1968). 'Die Werkstatt des Lampentöpfers Romanesis', *Staatliche Museen zu Berlin. Forschungen und Berichte* 10, 185–211.
- (1972). *Die römischen Bildlampen der Berliner Antiken-Sammlung* (Berlin).
- Hug, E. (1927). Art. 'lucerna', in *RE*, cols 1566–1613.
- Iványi, D. (1935). *Die pannonischen Lampen: eine typologisch-chronologische Übersicht* (Budapest).
- Joly, E. (1974). *Lucerne di Sabratha* (Rome).
- Jullian, C. (1899). 'Notes gallo-romaines: remarques sur un essai d'inventaire des figlinae gallo-romaines', *RÉA* 1, 143–62.
- Lamboglia, N. (1952). 'Apuntes sobre cronología cerámica', *Publicaciones del Seminario de Arqueología y Numismática Aragonesas* 3, 73–90.
- Lancel, S. (1962–5). 'Tipasitana I: fouilles dans la nécropole occidentale de Tipasa', *Bulletin d'archéologie algérienne* 1, 4–74.
- Leibundgut, A. (1975). 'Zu den römischen Fundlampen der Schweiz', *Arheoloski Vestnik* 26, 100–110.
- (1977). *Die römischen Lampen in der Schweiz* (Bern).

- Loeschcke, S. (1909). 'Keramische Funde in Haltern', *Mitteilungen der Altertumskommission für Westfalen* 5, 101–322.
- Maetzke, G. (1959). 'Notizie sulla esplorazione dello scarico della fornace di Cn. Ateius in Arezzo', *Acta RCRF* 2, 25–7.
- Marsa, J. (1972). 'Roman Lamps in the Prague National Museum and in other Czechoslovak Collections, II', *Acta Musei Nationalis Pragae* 26, 80–152.
- Menzel, H. (1969). *Antike Lampen im römisch-germanischen Zentralmuseum zu Mainz*, corrected edn (Mainz).
- Mercando, L. (1973). Art. 'lucerna', *EAA Supplemento*, 419–42.
- Mocchegiani Carpano, O. (1977). Comment in Carandini (1977: 172–3).
- Neumann, A. (1967). *Lampen und andere Beleuchtungsgeräte aus Vindobona (Der römische Limes in Oesterreich 22)* (Vienna).
- Oxé, A. (1933). *Arretinische Reliefkeramik vom Rhein (Materialen zur römisch-germanischen Keramik, Heft 5)* (Frankfurt a.M.).
- (1943). 'Die Halterner Sigillatafunde seit 1925', *Bodenaltertümer Westfalens* 6, 15–76.
- Pavolini, C. (1977). 'Le lucerne fittili del Museo Nazionale di Napoli', in Carandini (1977: 33–51).
- Perlzweig, J. (1961). *Lamps of the Roman Period (The Athenian Agora 7)* (Princeton).
- Petru, S. (1972). *Emonske Nekropole (odkrite med leti 1635–1960)* (Ljubljana).
- Plesničar-Gec, L. (1972). *Severno Emonsko Grobiščë: The Northern Necropolis of Emona* (Ljubljana).
- Ponsich, M. (1961). *Les lampes romaines en terre cuite de la Maurétanie Tingitane* (Rabat).
- Salone, C. (1973). 'Lucerne', in *Ostia III: Le Terme del Nuotatore = Studi Miscellanei* 21, 395–404.
- Sotgiu, G. (1968). *Iscrizioni latine della Sardegna 2.1* (Padova).
- Szentlélek, T. (1959). 'Aquincumi mécskészítő műhelyek' ['Lamp-Making Workshops in Aquincum'], with English summary, *Budapest Régiségei* 19, 167–203.
- Toutain, J. (1941–42). Untitled report in *Bulletin archéologique du Comité des travaux historiques*, 282–4.
- Varni, S. (1866). *Appunti di diverse gite fatte nel territorio dell'antica Libarna 1* (Genova).
- Vegas, M. (1966). 'Die römischen Lampen von Neuss', in *Novaesium II (= Limesforschungen, Studien zur Organisation der römischen Reichsgrenze an Rhein und Donau)*, 63–127.
- Vertet, H., A. Lasfergues, and J. Lasfergues (1972). 'Remarques sur les filiales des ateliers de la Vallée du Pô, à Lyon et dans la Vallée de l'Allier', in *I problemi della ceramica romana di Ravenna, della Valle padana e dell'alto Adriatico* (Bologna), 273–82.
- Waldhauer, O. (1914). *Kaiserliche Hermitage: die Antiken Tonlampen* (St Petersburg).
- Walters, H. B. (1914). *Catalogue of the Greek and Roman Lamps in the British Museum* (London).
- Wielowiejski, J. (1970). *Kontakty Noricum i Pannonii z ludami Północnymi* (Wrocław).
- Wiesinger, F. (1922–24). 'Zur Topographie von Ovilava (Wels in Oberösterreich)', *JÖAI* 21–22, Beibl. cols 345–424.
- Zerbinati, E. (1971). 'Vetri romani ed altri reperti editi e inediti da Villadose, Rovigo', *Padusa* 7, 39–58.

[[Addendum

Various matters require comment here.¹³⁸ One of the first scholars who made good use of this paper was Duncan-Jones (1990: ch. 3), who argued, on the basis of a number of suggestive observations and calculations, that the patterns of lamp-distribution tended to show that the economy of the Roman Empire was regional rather than integrated. That is not how I see the matter (see below, pp. 297–300), but much depends on how one defines the terms ‘regional’ and ‘integrated’.¹³⁹ An ‘integrated’ market for lamps would not have produced an overall pattern different from the one actually attested (the key question concerns prices, and this question we cannot of course answer). Duncan-Jones was probably right, however, to give more emphasis than I did to chronological differences between the activities of various lamp ‘firms’—a topic that still requires further investigation.

The general tendency of this paper was in any case to propose that the Roman economy knew quite complex ways of organizing production, and hence to subvert the Finleyan model (cf. Woolf (2001: 49); Pavolini (1990: 443) drew the wrong conclusion in this respect from my argument against large-scale long-distance trade in lamps).

Pavolini (1987: 143) was quite right, however, to criticize my claim that most terracotta lamps had been made ‘in the vicinity’ of the places where they were purchased: ‘vicinity’ is too restrictive—we should think of production centres selling to areas as much as several hundred miles across, as indeed the above paper implies (and see below, p. 150).

The *institores* have been very thoroughly investigated by Aubert (1993; 1994; 2001: 99–100, 104), who rightly points out that the legal sources and ordinary language use the term differently. Those who were covered by the *actio institoria* will commonly have been known as *vilici* or by other terms.

Several shipwrecks published since 1980 included terracotta lamps in their cargoes, like the Balearic wreck containing lamps of C. Clodius (above, p. 128). Without knowing the intended destinations of these cargoes, it is hard to gauge their significance. The most interesting cases may be Parker (1992: no. 164 (Camarina), no. 347 (Culip IV, SW Spain), and no. 470 (Grand Bassin C, Provence)), this latter being easily the largest known shipment, with more than 2,300 lamps (Solier 1981: 94–113).

The descriptive literature about Roman terracotta lamps has continued to balloon. The tables given above would now need adjustment (and Procaccini 1981 provided some inconsequential additions), but I am not aware of any information that would change the overall patterns.

Transport costs: Bailey (1987) argued that I exaggerated the cost of land-transport, and indeed the non-viability of land-transport in the Roman Empire has sometimes been over-stated (on this topic see pp. 159, 196). That many lamps were made far from the original sites of the ‘firms’ in question was already established some twenty years ago by X-ray fluorescence analysis (see below, p. 150), and it is regrettable that this has

¹³⁸ All the contributions mentioned in this addendum appear in the bibliography at the end of the book.

¹³⁹ I notice in passing how *Peacock et al. (1990: 70) consider that lamps made at Sidi Marzouk (central Tunisia) but found at Carthage, less than 200 km away, had passed ‘beyond the region’.

not been more widely recognized. M. J. Hughes, in an appendix to Bailey (1987), reported on laborious research with neutron activation analysis that led in the same direction. Nonetheless, transport costs remain vitally important.¹⁴⁰

Those who write about *terra sigillata* frequently hypothesize branch workshops; see for instance the study by Bémont and Jacob (1986), reviewed by Guéry (1990), and also Pucci (1993) (cf. below, p. 149). But there is undoubtedly more to say about how they were organized. See further Fülle (1997), Oxé et al. (2000), Desbat (2000). Malfitana (2006) provides some recent bibliography.

At first sight, the theory put forward in this article fits with reasonable comfort into a neo-Ricardian trade theory (for a summary of which see Maneschi 1998). If lamps can be made almost anywhere, there can only be comparative advantage (in terms of costs), and hence trade, if transport costs are quite low. The reality was a good deal more complex.]]

¹⁴⁰ Bailey's strangest claim (*1987: 61) is that 'the concepts "import" and "export" ... have unmistakably clear meanings within the archaeology of the Roman Empire'.

Production, Distribution, and *Instrumentum Domesticum*

(1993)

[[This paper draws some conclusions from the volume of conference proceedings entitled *The Inscribed Economy*.*]]

The material itself—glass, marble, *terra sigillata*, amphorae, bricks, terra-cotta lamps—summons and challenges the researcher, and each category has its own fascination and its own very difficult problems. In the present state of knowledge no one will expect the study of *instrumentum domesticum* or of the related topics discussed above to provide decisive answers to the macroeconomic questions raised at the outset. The evidence which the contributors have been analysing does not, for instance, prove that the economy of the Roman Empire was by the standards of the pre-industrial world a relatively integrated one; or that Romans of great and of moderate wealth possessed the mechanisms with which they could organize many sectors of the Roman economy to profit from supplying the market with commodities; and it certainly does not settle fully the controversy between the redistributive economy and the market economy. Yet with respect to each of these problems the evidence of *instrumentum domesticum* does lead in a particular direction.

To take first the market economy versus the redistributive economy (which is not a stark ‘either ... or ...’ choice): with two exceptions, the papers in this volume refer to commodities which for the most part seem to have been distributed by market mechanisms. (I leave aside here the somewhat changed circumstances which arose once the emperor’s role increased in the later Antonine and Severan periods.) Naturally the central government took thought for supplying the military, and the well-to-do supplied a considerable proportion of the needs of their dependants from their own properties. But it

* It first appeared in Harris (1993d) = *Journal of Roman Archaeology* Supplement 6, 186–9, and is reprinted by permission of *JRA*, with minor changes.

is emphatically the market that seems to dominate, at least as far as supplying cities is concerned.

Marble and olive oil are advanced as partial exceptions to this pattern. Fant's paper [[Fant 1993]]—which is extraordinarily rich and suggestive with respect to patterns of consumption—maintains that the distribution of marble should be seen not only and not primarily as a commercial operation, but rather as part of the system of imperial grandeur and imperial largesse. In some ways this is an appealing argument. But it may seem exaggerated, and it takes too little account of the fact that provident emperors gave thought to their own finances as well as to the *beneficia* they could bestow.¹ It was after all the accumulator Tiberius who confiscated many of the quarries (Suetonius, *Tib.* 49), and it may have been under another accumulator, Vespasian (see Suet. *Vesp.* 16), that sales of marble outside Rome truly proliferated. We should distinguish between batches of marble columns donated to cities, authorized purchases made by cities, and other commercial transactions. Marble columns made particularly splendid and conspicuous gifts. And marble of course differed from almost all other goods except metals in that most of the sources of supply were owned monopolistically.

Rodríguez-Almeida and some other scholars believe that the imperial government was directly involved in the distribution of olive oil to the civilian population under the early principate.² However, the *instrumentum domesticum* and the other literary and epigraphical sources are all massively silent on the subject of an imperial role earlier than the reign of Marcus. It is true that there are some interesting developments just before that time. During or shortly after the 140s the olive oil merchants from Baetica had a former *praefectus annonae*, M. Petronius Honoratus, as their official patron, and no doubt they received or at least hoped for favours from him.³ But this does not by any means necessarily imply that the *praefectus annonae* administered the importation of olive oil, even at this date. Nor do the so-called delta graffiti, which (apart from one dubious instance) begin to appear on Baetican amphorae in the year 140,⁴ give any indication that that was the case.

It will not be disputed that the term *annona* can in some contexts refer to commodities other than grain. But the positive evidence that the imperial

¹ Cf. Fant (1993). In order to establish that 'Augustus and his successors...were only concerned to provide [marble] for themselves and to make Rome a city *pro maiestate imperii ornata*', he would need to show that they subsidized the private use of marble in the city, and that their agents neglected the revenues which marble quarries could produce.

² See Rodríguez-Almeida (1993: 99).

³ *CIL* VI.1625b = *ILS* 1340 (with the text improved by Tchernia (1980: 155–6) and Panciera (1980: 243–4). *CIL* VI.1620 = *ILS* 1342 is a parallel dedication to a *praefectus annonae* by the *mercatores frumentari et oleari Afrari* (but he was not their patron). Cf. *Historia Augusta*, *Pius* 8.11. Rome already possessed a *portus olearius*; see the inscription published by Panciera (1980: 238–41 = *AE* 1980 no. 84).

⁴ On these see Rodríguez-Almeida (1984: 235–51).

power was in charge of importing Rome's olive oil from Baetica in pre-Antonine times consists of a flowery passage of Pliny's *Panegyric* (29) which will not bear any such heavy burden. When Annona is personified on imperial coins, her insignia always have to do with grain.⁵

Insofar as the papers in this collection are relevant to the question of the economic integration of the Roman Empire, they seem to hint at relatively integrated markets. This applies to the market in marble, which was hauled remarkably long distances, often for purposes of trade, and to the market in glass [[on which see below, p. 171]]. It has already been argued that the distribution patterns of terracotta firm-lamps may support rather than weaken a notion of the Roman economy as quite integrated. Of course it could be objected that these were only minor sectors of the imperial economy. What really speaks most strongly for a relatively high level of integration in the imperial economy is the long-distance trade which supplied the metropolises of the Empire with wine and oil from afar, and all the cities of the Empire with other major commodities such as metals.

This volume has not revealed much that is new about the ownership of assets or enterprises in the Roman Empire. It has, however, thrown into the relief the figure of the freedman, and in particular it raises once again the question about the relative importance of those whom Garnsey baptized as 'independent freedmen'.⁶ The problem is to know whether those freedmen who were active in commerce normally represented in one way or another the interests of their *patroni*. Or were they often among those who were free of obligations to their former owners? It is hard to classify most of the freedmen who can be glimpsed in the *instrumentum domesticum*, those for instance who produced terracotta lamps in the second century. One thing we can do, however, is to add prosperous provincial freedmen to the Italian ones on whom Garnsey concentrated.

In the realm of commercial organization, two problems in particular require some additional comments. One is the matter of branch workshops. These are, as Pucci emphasizes [[Pucci 1993]], a well-established element in the production of *terra sigillata*: the branch workshops of Ateius, in particular, amounted to an elaborate system.⁷ Sternini's paper [[Sternini 1993]] explores the possibility that branch workshops were also organized by some makers of glass. In an earlier article I hypothesized that a network of branch workshops was the best way of explaining much of the diffusion of *Firmalampen* in the western Empire.⁸ The argument was that terracotta lamps, being cheap and easy to produce locally,

⁵ Cf. Rickman (1980: 257–67).

⁶ Garnsey (1981).

⁷ In Spain the *terra sigillata* potters of Tritium Magallum may have had branches at Termantia and Clunia, according to Mayet (1984: 1.237). [[For Gaul, see above, p. 136.]]

⁸ Harris (1980b) [[above, Chapter 5]].

could seldom have borne the transport costs of being carried long distances from single central production centres; and that the system of *institores* allowed the Romans to organize just such a system of branch workshops. Precisely as this model would lead one to expect, a certain number of moulds for making *Firmalampen* have been found in the provinces, even though the firms in question originated in Italy. I expressed the hope that scientific analysis would determine whether the surviving lamps with | the same firm-names were commonly made at different sites widely separated from each other. The work of Gerwulf Schneider and his collaborators has now shown clearly that this was indeed the case.⁹ (Incidentally, it looks as if work such as that of Schneider, Olcese, and Peña will fairly soon give some valuable clues about the geographical range of particular centres of *terra sigillata* and lamps.)

In one significant respect I am inclined to modify what I wrote previously on the subject of branch workshops. Pavolini was right to criticize my remark that most lamps were made 'in the vicinity' of the places where they were purchased:¹⁰ we should think rather of production centres selling to areas as much as several hundred miles across. It has also been suggested that I overstated the cost of land transport.¹¹ Perhaps so: the problem is full of unknowns. But the problem cannot be wished out of existence.¹² Let us be clear that there is no reason to think that the market for simple terracotta lamps was willing to bear the costs of long-distance land transport when there were sources closer at hand. Much of the phenomenon of very wide *Firmalampen* distribution (not all of it, of course) is probably to be explained by means of branch workshops.¹³

Another form of business organization which has appeared several times in these papers [[Harris 1993d]] is the *locatio conductio* contract. From Spain to Oxyrhynchus, this was an everyday mechanism: Pucci appositely cites the examples that appear in *P.Oxy.* 50.3595–7.¹⁴ It enabled the well-to-do to exploit their assets without the expense or anxiety of direct management. But its overall economic effects are not clear, and deserve a closer examination than they have so far received. The full range of trades regularly involved in *locatio conductio operis* and *locatio conductio rei* needs to be catalogued. And

⁹ Besides Schneider (1993) see Schneider and Wirz (1991).

¹⁰ Pavolini (1987: 143). [[See above, p. 130.]]

¹¹ Bailey (1987: 60–61), with most of whose conclusions I disagree (a full discussion would bulk too large in the present essay). Bailey is to be lauded because unlike most ancient lamp scholars he is at least willing to consider the problem of transport costs. More typical in their approach are e.g. Maestripieri and Ceci (1990). I doubt whether much of the diffusion of *Firmalampen* is to be seen as a result of a need for return cargoes (as argued by e.g. Duncan-Jones 1990: 49): the supposed routes are simply wrong, with the possible exception of Rome to Africa Proconsularis.

¹² As by Haley (1990).

¹³ Thus I disagree with Pavolini. No doubt future work will clarify this matter further.

¹⁴ Originally published by Cockle (1981).

what was the effect of this system on artisan *conductores*, who might in years of economic difficulty find themselves without contracts and without visible means of support?

With regard to labour, nothing in this volume brings comfort to those who attribute small importance to slave labour in the economy of the Roman Empire outside Italy, but neither is there any wealth of evidence about slavery in the *instrumentum domesticum*. As usual, the frequent appearance of freedmen, as for example in the painted inscriptions on Baetican amphorae (Manacorda and Panella), is suggestive; and it might be considered obvious that a proprietor setting out to exploit vineyards or olive groves anywhere in the western provinces would make sure he had slave workers more or less to the extent recommended by the agronomists. In the conditions of the high Empire, attaining maximum efficiency on an estate (something which many in Baetica, Africa Proconsularis, and Tripolitania manifestly desired) practically required a good measure of reliance on servile labour. |

In spite of its uniqueness, the Roman economy continues to invite comparisons with other periods. Analysing one such period, the economy of early-modern Europe, Braudel wrote as follows:¹⁵

With a few exceptions, the capitalist, that is in this period the 'important merchant' with many undifferentiated activities, did not commit himself wholeheartedly to production. He was practically never a farming landowner with feet firmly planted in the soil. . . . Capitalism did not invade the production sector until the industrial revolution, when machines had so transformed the conditions of production that industry had become a profit-making sector.

In some respects—in terms of geographical range especially—the economy he is describing makes the economy of the Roman Empire look old-fashioned. But as we have repeatedly seen, the economy of the Roman Empire also had features that were not at all archaic (however else they should be characterized). Might we not, for instance, be prepared to say that some of the quasi-capitalists of the Roman Empire did indeed interest themselves deeply in production, and particularly in the 'rational' production of wine, olive oil, bricks, and *terra sigillata* (to mention only commodities discussed in detail in this book)? That was precisely what gave rise to most of what we describe as *instrumentum domesticum*.

[[Addendum

Further researches into *instrumentum domesticum* appeared in *Epigrafia della produzione e della distribuzione* (1994). Fant's most recent views about the distribution of

¹⁵ Braudel (1979: 327 = 1982: 3723).

marble can be found in Fant (2008). Diocletian's Price Edict treats marble as a normal item of trade; cf. Corcoran and DeLaine (1994: 268). For recent work on the *terra sigillata* 'labels' see the Addendum to Chapter 5. For *instrumentum domesticum* and literacy see Harris (1995b), and for the relationship between literacy levels and the development of the Roman economy see the Addendum to Chapter 12.]]

Part IV

Trade

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Trade [70–192 AD]

(2000)

INTRODUCTION¹

All forms of market exchange fall within the scope of this chapter, including everything from local trade in which very little transport of goods might be involved to trade over long distances, both inside and outside the Roman Empire. We shall also need to take into consideration some transfers of goods which took place outside the market. The main commodity so distributed was the grain which, having come into the government's hands partly as provincial tribute, was shipped to Rome and divided gratis among the recipients of the corn dole. The Roman Empire knew many other types of governmental and private largesse; indeed taken together they play an essential role in the social system.² We shall also notice other ways in which the imperial government and city governments were involved in commercial activities. However the

¹ [[This chapter was last revised in 1990, though it was not published till 2000. In 1995 I was able to add the following note.]] Works of general relevance to the subject which this chapter does not take into account include von Freyberg (1989), Rathbone (1991), the Einaudi *Storia di Roma* (Momigliano and Schiavone 1988–93), which contains wide-ranging essays on the imperial economy, and Harris (1993b). On particular topics see also the following. For the evidence from wrecked ships: Parker (1992). Prices: Drexhage (1991a), Duncan-Jones (1994: ch. 2). The organization of the grain supply: De Salvo (1992). On trade across the eastern frontiers: Begley and de Puma (1991); across the northern frontiers: Wolters (1990; 1991). About olive oil: Jacques (1991); olive oil and wine: *Amphores romaines* (1989). Metals: Domergue (1994a; 1994b). On *terra sigillata*: Pucci (1993). Glass: Sternini (1993). Marble: Fant (1993). Perfume: Mattingly (1990). On markets in the literal and figurative senses see respectively De Ligt (1993) and Andreau (1991). On the term *emporos* see Drexhage (1991b). Representations of the merchant: Giardina (1993a). Social elites and trade: Wallace-Hadrill (1991), Gutsfeld (1992). On the organization of commercial enterprises see Aubert (1994); on *societates* and the transportation of metal ores (under Tiberius) see Liou and Domergue (1990). For the Customs Law of Ephesus see SEG XXXIX.1180 and the map in Nicolet (1993: 931). On financial systems: Howgego (1994). Concerning the early imperial government's efforts to provide infrastructure see H. Schneider (1986). [[For the places mentioned in this chapter see Map 3.1.]]

² Concerning imperial largesse see Veyne (1976). Private largesse: Hands (1968). But it is scarcely plausible to maintain, with Whittaker (1985: 59), that 'gift exchange' was a phenomenon comparable in scale to market exchange.

principal problems to be discussed here concern trade—defined here as exchange of goods in which a desire for profit is the motive of one party or both—and especially trade taking place over considerable distances, at least from one city's territory to the next.³ |

One question we have to face is simply whether trade was very important. The question has commonly been presented as a crude dichotomy: either trade was mainly a matter of 'luxuries' and special cases, a relatively minor by-product of an agrarian economy which had few of the modalities of more vigorous pre-industrial economies, or the Romans developed an intense commercial system which had effects on large segments of the population and rivalled in scale the most commercial economies which ever existed before the twentieth century. The latter point of view certainly cannot be defended in its pure form.⁴ The 'minimizing' view, on the other hand, still has champions,⁵ though it may be doubted whether it has ever been much favoured by anyone who combined a wide knowledge of Mediterranean archaeology and of the ancient texts. Those who have played down the importance of Roman trade have often ignored the full range and implications of the evidence. A sub-group of 'minimizers' consists of scholars who have been somewhat carried away by the anthropological discovery of gift exchange, which dates back to the famous study of M. Mauss published in 1925, or who have rather recklessly applied to the Roman Empire Karl Polanyi's emphasis on institutionalized reciprocity and redistribution as against market exchange.⁶

The dichotomy itself is misleading, and should be avoided.⁷ It is becoming steadily more obvious that the complex patterns of Roman trading included not only a limited trade in goods of specific geographical origin—papyrus or glass, for instance, or first-rate wines—but also a truly massive trade in certain commodities to certain areas. Furthermore the very great range of goods transported over some trade-routes means that large sums of money were involved and very many lives were affected. On the other hand Roman trade differed in some important ways from the mercantile economies of the

³ The most important general works are Rougé (1966) and the collective volumes edited by D'Arms and Kopff (1980) and by Garnsey et al. (1983).

⁴ The classic statement is that of Rostovtzeff (1957 [1st edn 1926]: esp. ch. 5), but although he maintained that 'the main source of large fortunes... was commerce' and applied the terms 'capitalism' and 'industry' to the Romans, he cannot easily be convicted of confusing the Roman Empire with the nineteenth century. Pleket (1990: 42) holds that no one would now espouse such a view as Rostovtzeff's.

⁵ Finley (1973: esp. 34, 126, 131) includes a guarded statement of this view. According to Jones (1954: 169 = 1974: 30), 'trade... played a very minor part in the economy of the Roman Empire'. See also Pekáry (1980), Hopkins (1983a: xi), and also Peacock and Williams (1986: 60–63), who misleadingly refuse to count selling commodities to the government as trade.

⁶ Polanyi (1957) is the work which has had so much belated influence; for an anthropological critique see Adams (1974).

⁷ Cf. Carandini (1980: 12; 1988: 264).

immediately pre-industrial era. If we are going to seek for comparisons, they should mostly fall in the period between 1400 and 1750.

Walking through the ruins of Ostia or Ephesus gives one the strong impression that the Roman Empire encouraged or allowed the growth of a vigorous commercial system.⁸ Many another body of archaeological material suggests the same conclusion. The concentration of people in the | major cities—Rome itself, also Alexandria and Carthage—would in any case lead us to suspect that essential and less essential goods were imported in great quantities from considerable distances. Rome probably had not far short of a million inhabitants in the first century AD, Alexandria had very roughly 600,000—and, according to Strabo, was the biggest trading centre in the world. Eventually Carthage approached the size of Alexandria.⁹ While we must pay attention to probable levels of aggregate urban demand, these very large cities (add Antioch perhaps) are a distinguishing feature of the Roman Empire. The fact that their inhabitants somehow or other fed, clothed, and housed themselves has extensive implications. Written sources, furthermore, show that long trading voyages all over the Mediterranean were commonplace, and that trade extended far into more distant waters. ‘Every sea has been opened,’ writes Pliny during the reign of Vespasian, ‘...and an immense multitude undertakes voyages.’¹⁰

But hardly do we begin to ask a historian’s questions about Roman trade when the evidence, vast in extent though it is, begins to fail us. We can scarcely do more than guess at the volume of trade in any commodity, with the exception of the wheat imported to Rome itself, at any period, and wheat we know to have been atypical because of government intervention. Our knowledge of prices is for most parts of the Empire very poor,¹¹ though for Egypt it has been possible to construct interesting if rudimentary prices series for various commodities. Another vital topic which remains obscure to us is the economics of transport. In short, the lack of useful quantitative evidence is a very severe handicap.¹²

The archaeological record is also problematical in many respects. A quite basic problem is that artifacts moved from place to place not only as objects of trade but for a variety of other reasons; we have already mentioned non-market exchange, and we must also keep in mind the effects of migration, of plundering, and of landowners’ moving the products of their far-away estates

⁸ Or consider the size of the dock at Aquileia, 380 m in length (Brusin 1934: 24).

⁹ The population of Rome has been endlessly disputed [[see p. 91]]. Alexandria: Delia (1988), Strabo xvii.798. Carthage: cf. Herodian vii.6.1 (referring to 238). For other big cities see Duncan-Jones (1982: 260 n. 4).

¹⁰ ‘For the sake of profits not knowledge’, he says, *NH* ii.118; cf. Juvenal xiv.275–84 (hostile). Not that such texts lead to any clear conclusion.

¹¹ This emerges from Duncan-Jones ([1974] 1982: 63–256).

¹² Cf. e.g. Morel (1982: 205), Tchernia (1986a: 34–5).

to places where dependants might use or consume them.¹³ We commonly do not even know for certain whether surviving artifacts were locally made.¹⁴ Another kind of difficulty stems from the fact that the recent proliferation of archaeological information is disproportionately western, so that the author of any survey is bound to be frustrated by unanswerable questions about the eastern half of the Empire.

The study of Roman trade is in flux. Some impressive recent studies of particular commodities have reached new levels of sophistication,¹⁵ and archaeological material and studies are accumulating so fast that any survey is bound to be seriously outdated before long. All we can do here is to consider what is now known about patterns of trade in various commodities, about the social and institutional mechanisms by which trade was conducted, and about the role of governments. Near the end of the chapter we shall return to the problem of scale.

THE GEOGRAPHICAL SETTING

The frontiers of the Empire had economic as well as military importance: there were tariffs, and outside the frontiers the rights and even the safety of a Roman were less secure than at home. But the power of Rome cast a long shadow, and the area in which Romans (that is to say, subjects of Rome) traded was vast. Indirectly, Roman trade extended into still more remote regions, even to China. One of our most important sources of information about Roman trade is the *Periplus Maris Erythraei* (*Voyage around the Red Sea*), a brief merchant's guide, probably composed some time in the period AD 40–70,¹⁶ to the markets of the Red Sea, East Africa, and the west coast of India. The northern frontier of the Empire was as permeable as the eastern one, though the north had fewer desirable commodities to offer; Roman goods are commonplace in the archaeology of south Russia and non-Roman Germany and even Poland and Sweden.¹⁷

¹³ For the latter practice see Whittaker (1985: 58–9). The wreck *Culip IV*, at the northern end of Spain's Mediterranean coast, offers a cautionary tale: according to conventional ideas, part of the cargo (Gaulish *terra sigillata*) must have been travelling south-westwards, while the thin-walled pottery and amphorae must have been going north-eastwards (Nieto 1986, Nolla and Nieto 1989).

¹⁴ For some recent progress in the chemical analysis of Roman amphorae and pottery see Martin-Kilcher et al. (1985), Mirti et al. (1990).

¹⁵ Tchernia (1986b) and Mattingly (1988a, 1988b) may be singled out.

¹⁶ The date: Casson (1989: 6–7), diverging somewhat from Casson (1984a: 39). In favour of AD 79–84: Miller (1969: 16–18).

¹⁷ Cf. Eggers (1951), Godłowski (1985). [[For our steadily increasing knowledge of trade beyond the frontiers see Bowman and Wilson (2009b: 16 n. 32).]]

The ready navigability of the Mediterranean by ships of the kind that the ancients were capable of building is one of those fundamental facts about the classical world which is sometimes in danger of being neglected. Also crucial is the navigability of many of the Empire's principal rivers such as the Guadalquivir, Ebro, Rhône, Rhine, Tiber, and Nile—to name only those whose commercial exploitation is amply attested. However the limitations on the navigability of the Mediterranean have to be stated, in particular the seasonal limitations. Sailing in winter was unpopular,¹⁸ and in the absence of compasses and charts,¹⁹ not to mention weather forecasts, even summer sailing was risky. The dangers of the Indian Ocean, the Atlantic, and the seas of the north-western Empire were of course greater still. Yet by comparison with the difficulties which the great oceans put in the way of the navigators of the fifteenth and sixteenth centuries,²⁰ the problems of Mediterranean shipping in Roman times were only moderate.

The fertility of some of the territories bordering on this useful stretch of water was also of very great importance: such territories could, if there was a market, export their agricultural surpluses.²¹ Another crucial fact about resources, one which had had a profound effect on Mediterranean history since the eighth century BC, was the dispersed location of mineral deposits. The best deposits of metal ores were not where they were most needed. The imperial power exercised widespread control over these resources, but they were also the basis of a large though little-known commercial market.

Another question concerns not geography itself but geographical knowledge. Every Roman of some education must have had at least an outline knowledge of Mediterranean geography. What is less clear is whether an interested person could acquire reasonably precise knowledge about potential trade-routes.²² This leads us to the vexed question of transport.

COMMERCIAL TRANSPORT

Before the transport revolutions which took place in the nineteenth century, the entire logic of long-distance trade was certainly different, particularly when it involved inland movement. We would of course like to know what

¹⁸ See Cary (1949: 25–9), Rougé (1966: 31–9), on sailing conditions in the different seasons. Pliny, *NH* ii.125 says that now greed drives people to sail in the winter.

¹⁹ Lack of charts: Casson (1971: 245–6).

²⁰ Cf. Crosby (1986: 104–31).

²¹ This statement must of course be understood within the context of Mediterranean ecology: Tripolitania is not fertile for most purposes, but with proper care and investment it could produce a large volume of olive oil (cf. Mattingly 1988a: 23–7).

²² On itineraries see Kubitschek (1916). Bekker-Nielsen (1988) may suggest a negative answer to this question.

kinds of trade were encouraged or discouraged by maritime, riverine, and land transport of the kinds which the Romans had at their disposal. Water-borne transport was seen as very advantageous: an estate should preferably be near the sea or a navigable river, says Columella.²³ What makes it easy to get building materials to Rome, in Strabo's account, is river transport: not only along the Tiber but along the Rivers Anio, Nera, Topino, and Chiani.²⁴ His descriptions of transport in Gaul and across the eastern Alps make it clear that in his time river transport was preferred to roads whenever possible (but the roads improved later).²⁵ The emperor Diocletian's Edict on Prices, though it does not give us real market prices even for its own period, shows that moving bulk commodities by land was enormously more expensive than moving them by sea, and given that land transport depended mainly on oxen and pack animals this makes perfect sense. According to one estimate, the ratio of land, river, and maritime transport costs was 55:6:1.²⁶

Roman merchant ships of the largest class were comparable in size to most of their European counterparts in the sixteenth to eighteenth centuries.²⁷ Not that size is everything: the fact that small ships could operate successfully in Mediterranean coastal waters, often relying on cabotage, kept down the cost of getting into the shipping business. By the late second century the rule was that a shipper of grain could only enjoy certain privileges if his ship had a capacity of 50,000 *modii* or more, which with wheat of average weight amounted to about 340 tonnes, or if he simultaneously operated five ships of 10,000 *modii*.²⁸ Commercial vessels of 340 tonnes burden therefore existed, and a few wrecks of this size are now known.²⁹ Most ships which carried non-grain cargoes were much smaller, and many trading ships were in the 20–40-tonne range.³⁰ This was for economic not technical reasons, and since it was still true in the sixteenth and seventeenth centuries should not cause us the least surprise.³¹ With respect to navigation too—although much remains unclear,

²³ Columella i.2.3 ('by which its crops can be carried away and goods brought in'); cf. Harris (1989b: 123 [[below, p. 190]]).

²⁴ v.235.

²⁵ iv.177, iv.207.

²⁶ Hopkins (1982: 86). Kunow (1980: 23) gives 62.5:5.9:1. It may be suspected that these ratios overstate the disadvantages of road transport (cf. Duncan-Jones [1974]1982: 368 for a ratio of 22.6:4.7:1 in eighteenth-century England).

²⁷ For the tonnage of sixteenth-century merchant ships cf. Braudel (1972: 1.295–312), Unger (1980: 265). Genoese ships: Heers (1961: 273–5), Unger (1980: 221).

²⁸ Dig. L.5.3 (Scaevola). An edict of Claudius had referred to grain ships of 10,000 *modii* capacity. On the sizes of merchant ships see Casson (1971: 171–3), who, however, mistakenly takes 10,000 *modii* to be the minimum capacity for a vessel which was to engage in overseas trade.

²⁹ According to Pomey (1982: 146), the late-republican wreck at La Madrague de Giens had a capacity of about 375 tonnes; the Isola delle Correnti wreck carried about 350 tonnes (Pomey and Tchernia 1978: 234). For the very largest ships (not in regular commerce) see Duncan-Jones (1977). [[See now Tchernia forthcoming. Several vessels are now known that had capacities well over 400 tonnes.]]

³⁰ Houston (1988: 553–60), with arguments of varying relevance.

³¹ Cf. Hopkins (1983b: 99–100).

especially the manoeuvrability of the average commercial vessel—recent work on the wreck at La Madrague de Giens confirms that some ships could tack into the wind at an impressively tight angle.³²

The marked superiority of water transport should not lead us to think that commercial transport by land was unusual or that it was always an unbearable handicap. Transport by sea had its negative side: there was always the danger of losing the cargo to jettison or to complete shipwreck even if you stayed within the narrow season of supposedly safe sailing. Some scholars have now grown restless with the orthodoxy according to which ‘no low-value bulky cargoes could have been traded profitably overland for any significant distances’.³³ Anyone who had the choice no doubt usually took the route over water, but what determined the feasibility of land transport was whether the market would tolerate its costs and still leave room for a profit—as it probably often did. We should not be over-impressed by the theoretical calculation, based on Diocletian’s Edict, that a wagonload of grain doubled in price when it had travelled less than 320 km.³⁴ In fact goods which were transported by water quite often had to be carried for considerable distances over land: this applied, for instance, to much of the grain and the olive oil exported from Africa Proconsularis. It has been argued that La Graufesenque, a major Gallic centre of the production of *terra sigillata* pottery which exported to Britain and the Rhineland, shipped its wares in the first place not down the River Tarn (which is not in fact navigable so high up) but overland to Narbo, by a route which must have involved at least 80 km of road travel.³⁵ Yet somehow it could be sold at a profit in distant locations. The distribution of East Gaulish pottery depended heavily on land transport.³⁶ The system of trunk roads covered virtually the entire Empire, was supported by numerous local roads of reasonable quality, and went on being improved at least down to Trajan’s reign. ‘Their roads can carry boat-loads,’ Strabo had written in his description of Italy.³⁷

If demand was strong enough, the costs of land transport could be accepted. They should be seen as a limiting factor, a very important one, but not as a proof that land transport was of little commercial use over substantial distances.

³² See esp. Pomey (1982) (for a comparison with what was possible in the seventeenth century, see 153 n. 37). Genoese navigation in the fifteenth century: Heers (1961: 176–7).

³³ Greene (1986: 40). Restlessness: Hopkins (1978b: 43–9), Meiggs (1982: 339–46), Spurr (1986: 144–6), Sippel (1987).

³⁴ Jones (1955: 164 = 1974: 37), as improved by Duncan-Jones ([1974]1982: 368) (note the latter’s doubts about the usefulness of the Edict on transport prices).

³⁵ Middleton (1980), Nieto (1986: 112).

³⁶ Wightman (1985: 153–4).

³⁷ v.235.

COMMODITIES

Many merchants avoided specialization, and for this reason among others it is artificial to discuss Roman trade commodity by commodity. On the other hand much confusion has resulted from failing to attend to the wide range of commodities traded, so a survey, necessarily incomplete, is essential.

Cereals

The normal system, for most of the Empire, was local production for local consumption: hardly any community attempted to live far away from an adequate source of cereals. The great cities were exceptions in that they had to import some of their cereals from beyond their own territories, and Rome of course was an exception on a grand scale; some cities of the second rank, such as Ephesus, may also have imported wheat regularly. In addition, the big military encampments had to draw grain from sizeable regions. |

The population of Rome is likely to have required more than 250,000 tonnes of wheat annually,³⁸ as well as large quantities of barley and animal fodder. In the main this did not come from districts nearby, which must largely have been given over to producing the higher-priced and perishable foodstuffs which the city consumed. We should accept as exaggerated but roughly correct the claim, recorded by Josephus, that the wheat of Rome was imported from North Africa and Egypt for eight and four months of the year respectively; this was a rhetorical simplification, but not far from the truth.³⁹

The wheat which was distributed by the government involved private entrepreneurs who shipped it to Rome.⁴⁰ However most of the grain which was imported by Rome was not the government's at all but the object of private commerce,⁴¹ and the majority of the inhabitants did not receive free grain. Not that the market operated in isolation from government actions, even at the beginning of our period—and as time passed intervention increased.⁴² Augustus had introduced the office of *praefectus annonae*, and Claudius had offered incentives to the shippers of grain. The latter also built

³⁸ Rickman (1980: 10). Foxhall and Forbes (1982: 72) estimate 212,000, Garnsey (1983: 118–19) estimates 200,000, Casson 400,000 (1984b: 97).

³⁹ Josephus, *BJ* ii.383–5; see Rickman (1980: 67–71). However, grain was imported to Rome from many other places (from 'everywhere' according to *IGSK* xii.211, lines 10–11). [[For a sustained but to my mind exaggerated critique of Josephus' claim, see Erdkamp (2005: 226–30).]]

⁴⁰ It seems that occasionally the *fiscus* actually bought grain for use in the capital. The evidence for this (listed by Casson 1984b: 103) is all Trajanic.

⁴¹ Rickman (1980: 87–93, 187–97), Casson (1984b: 96–116), with arguments of very unequal weight, against Pavis d'Escurac (1976). But see also Whittaker (1985: 53–4).

⁴² Rickman (1980: 90–92).

a huge new harbour for the city at Portus, which Trajan remodelled. And at Rome itself the state had by this time built up a vast array of quays and warehouses.⁴³ Such facilities obviously tended to ease the lot of the grain merchants. In other cities too merchants brought the grain to market, with more or less frequent intervention by public officials and by benefactors.⁴⁴

Olive oil

To ancient Mediterranean people, olive oil was an essential. It was part of their diet, they used it for much of their indoor illumination, it was an ingredient in soaps, medicines, and cosmetics.⁴⁵ Demand is difficult to estimate: a guess of nearly 20 litres per person per year (implying | nearly 200,000 hectolitres a year for the city of Rome) seems rather high,⁴⁶ but suggests the scale of the supply problem. Before the advent of railways, olives were grown further north than they normally are in modern times,⁴⁷ yet even with the widest possible pre-modern diffusion of the olive tree a considerable portion of the Empire had to meet its need for olive oil through imports; in spite of its rugged appearance the olive tree is sensitive to cold and rain. Large cities and the army, but also the provinces which lay north of the olive tree's natural limits,⁴⁸ created demand for oil from afar.

One of our principal sources of information, as with wine and with the popular condiment *garum*, consists of the hundreds of thousands of surviving amphorae and amphora fragments, which have brought to light (sometimes it is very fitful light) entire patterns of Roman trade. This evidence continues to accumulate. In the western Empire, the main routes of the trade in oil are reasonably clear. The characteristic form of Baetican amphora, Dressel 20, achieved very wide distribution during the first and second centuries.⁴⁹ Other major oil-exporting areas in the western Empire were Tripolitania and, later, in

⁴³ Castagnoli (1980).

⁴⁴ Occasionally emperors were involved in the provinces' problems in obtaining grain. This is probably the significance of the procurator for the *annona* of Narbonensis and Liguria in *CIL* XII.672 = *ILS* 1432. A Greek city commonly had officials called *sitonai* who took responsibility for the grain supply (see Pavis d'Escurac 1987; it was an occasional office: p. 118), but this did not mean that the trade was in public hands, only that the *sitonai* were to see to it that grain came into the city and was sold at a bearable price. The equivalent in the western cities were the *curatores annonae*. The money might come from the city's treasury or from the magistrate's private resources (Pavis d'Escurac 1987: 120–21).

⁴⁵ Amouretti (1986: 177–96), Mattingly (1988b: 33).

⁴⁶ Amouretti (1986: 183) (for Greece); cf. Mattingly (1988b: 33–4).

⁴⁷ See Callot (1984: 7–8) for the conditions which the tree will tolerate. The line indicating the northern limits of the olive tree in Braudel (1972: 1.232, fig. 19) is at some points too far south.

⁴⁸ See e.g. Le Gall (1983) on the spread of olive oil to northern Gaul. Dressel 20 amphorae which contained olive oil are found on civilian as well as military sites in Britain: D. Williams and Peacock (1983: 270).

⁴⁹ Peacock and Williams (1986: 136); unfortunately no good distribution map is available.

the area of Africa Proconsularis known as Byzacena. The centres of production in Baetica are crowded on and close to the River Guadalquivir and its tributary the Genil,⁵⁰ which vividly illustrates the importance of riverine and maritime transport: this oil arrived at affordable prices in central Italy, notwithstanding a journey of at least 2,000 km (Hispalis to Ostia). It was also shipped in considerable quantities to among other places the Rhineland and Britain, where the army formed part of the clientele. It seems likely that both Baetican and Tripolitanian producers could market their oil effectively in part because of their highly organized production methods.⁵¹ In the Flavian period, oil from Africa Proconsularis won a substantial share of the Italian market, assisted by easier access (Carthage to Ostia was a three-day journey in good conditions). For the eastern Empire, the exporting regions are harder to identify. Most of the surviving amphorae of Alexandria are unpublished, and no specialist study whatsoever has been devoted to the currents of the long-distance trade in olive oil in the eastern Mediterranean; Tripolitania was one of the sources.⁵²

Eventually the government took some steps to ensure that Rome, and perhaps other places, received adequate supplies of oil. In the first century its concern had probably been limited to providing for military supplies, and to the efficient exploitation of imperial estates.⁵³ But from an inscription set up at Rome we know that in or shortly after 140s the olive-oil merchants from Baetica had a former *praefectus annonae* as their official patron; no doubt they received or at least hoped for favours.⁵⁴ In the reign of Marcus we hear of a high-level assistant of the *praefectus annonae* whose job involved him deeply in bringing oil to the Roman market, apparently at a subsidized price,⁵⁵ and there was now an imperial procurator in charge of receiving oil at Ostia.⁵⁶ By the 160s those who shipped olive oil to Rome, like the shippers of grain, were entitled to immunity from civil office-holding;⁵⁷ this, however, was the limit of official involvement before the Severan emperors.

⁵⁰ See the map in Ponsich (1980: 52, fig.1); further bibliography in Mattingly (1988b: 38).

⁵¹ Tripolitanian oil seems to have come from large estates: Mattingly (1988b: 37).

⁵² Grace (1955) tells us little, but suggests the Aegean as the main source for Alexandria. Tripolitanian olive oil amphorae in the eastern Mediterranean: Peacock and Williams (1986: 166–7). The most useful contribution to date is Riley (1979).

⁵³ Remesal Rodríguez (1986: 765–6) was quite unjustified in saying that the Baetican oil trade was ‘controlled’ by the state from the Flavian period. It is interesting, however, that there was already a facility at Rome known as the *portus olearius*: see the inscription published by Panciera (1980: 238–41) = *AE* 1980 no. 84.

⁵⁴ *CIL* VI.1625b = *ILS* 1340 [[see Harris 1993c: 187 n. 3 (above, p 148)]].

⁵⁵ *CIL* II.1180 = *ILS* 1403, concerning Sex. Iulius Possessor, whose office was ‘adiutor praef. annon. ad oleum Afrum et Hispanum recensendum item solamina transferenda item vecturas naviculariis exsolvendae’ [‘assistant to the *praefectus annonae* for assessing both African and Spanish oil, for transferring emergency supplies and for paying transport costs to the ship-owners’]. The last phrase implies a subsidy.

⁵⁶ *CIL* XIV.20 = *ILS* 372 (AD 175); he is rather obscurely entitled ‘proc. ad oleum in Galbae/Ostiae portus utriusque’. For evidence of a distribution of oil in 177–80, see *CIL* VI.34001 = *ILS* 9022.

⁵⁷ Callistratus in *Dig.* L.6.6.6. For oil distributions at Rome under the Severi see Rougé (1966: 468).

Wine

Practically every province of the Roman Empire could produce its own wine, and most of them could do so in abundance. Yet it is clear that a great deal of wine was transported from one territory to another by way of commerce. The amphora evidence is once again important, although it is somewhat perilous to use,⁵⁸ above all because wine could also be carried in *dolia* (much larger vessels) or in wooden casks; some remains of these containers survive, but not in sufficient quantities to prove much. [[Marlière 2002 renders the latter comment obsolete.]]

In our period the wines most prized by the Roman elite were mainly Campanian,⁵⁹ but this trade was not of primary economic significance. The key question is what the mass of the population drank. In most parts of the Empire the wine will always have been a local product, or one which came from a neighbouring territory. But huge quantities of wine were shipped considerable distances,⁶⁰ the principal reason being once again that the large cities concentrated more demand than could be met in their own immediate regions. On a fairly conservative estimate the demand for wine at Rome itself is likely to have been on the order of 1.5 million hectolitres a year in the first century,⁶¹ and only a small proportion of this demand could be met by vineyards near the city. Other large cities all over the Empire, and military encampments as well, will also have depended on long-distance imports.

In the Flavian period and the second century, Rome's most important sources were probably on the west coast of Italy and in Gallia Narbonensis, with Hispania Tarraconensis making a major contribution and also Crete.⁶² In other words, the spending power concentrated in the capital stimulated production over a wide area, the area which, while possessing suitable climate and soil, was most accessible by sea. Alexandria is likely to have had a somewhat similar effect: Strabo says that Syrian Laodicea supplies Alexandria with most of its wine, and there is no reason to suppose that this changed in the first or second century; from other sources we know that second-century Alexandria imported wine from the Aegean.⁶³

⁵⁸ See esp. Tchernia (1986b: 76–7).

⁵⁹ Ibid. 201–3, 277–8. Italian wine as a luxury in the Greek world: Lucian, *Ship* 23, Alciphron iv.13.9.

⁶⁰ This the amphorae do demonstrate, e.g. those from Tarraconensis at the Terme del Nuotatore site at Ostia (Tchernia 1986b: 244).

⁶¹ See ibid. 21–7.

⁶² Ibid. 238. On Crete see Chaniotis (1988: 73), who argues cogently that it exported wine in many directions 'on a massive scale' (cf. Tchernia 1986a: 34–6). A lot of this wine probably went to Alexandria as well as to Rome.

⁶³ Strabo xvi.752; Clement of Alexandria, *Paed.* ii.2.30. Cf. also Johnson (1936: 352) and, concerning some of the problems that arise in analysing wine imports into Roman Egypt, Rathbone (1983).

The imperial government did not intervene in any fashion in the trade in wine.⁶⁴

Other foodstuffs

Describing the crucial trading venture of his career, Trimalchio says that he loaded his ships with bacon and beans as well as with wine, perfume, and slaves.⁶⁵ We can unfortunately gain very little idea of the extent or patterns of Roman trade in meat, fish, dairy products, vegetables, or fruit over moderate or long distances. Some foodstuffs were too perishable to travel very far, but demand was considerable in the great centres of population, and meat and fish could be preserved by salting. Strabo says that salted meat was supplied to Rome and Italy from Belgica, and also mentions that Italy was supplied with Cisalpine pork.⁶⁶ Not only Trimalchio but also real-life merchants might concern themselves with legumes: some of the documents from Murécine (Pompeii) in which the main commodity is grain, also mention chickpeas and lentils.⁶⁷ Vegetables were a major element in the diet of the poor.⁶⁸ Dates were inexpensive in Italy, even though they were undoubtedly imports.⁶⁹ These fragments of information help to suggest that in fact trade in foodstuffs other than wheat was a vast and complex affair. But neither the trade in ordinary foodstuffs nor the luxury trade which transported all manner of exotic edibles across the Empire can be even approximately quantified.

The popularity of *garum* and other fish sauces is indicated by the numbers of the surviving amphorae which carried them; at Ostia under the Flavians these amphorae outnumbered those containing oil.⁷⁰ It is clearly established that a large part of the western Mediterranean production of these commodities came from Baetica and Mauretania Tingitana.⁷¹

Slaves

In the description of Roman trade given so far, the main thing which differentiates it from the trade of, say, sixteenth-century Europe is that the Roman

⁶⁴ Tchernia (1986b: 27–8).

⁶⁵ Petronius, *Sat.* 76.

⁶⁶ Strabo iv.197 and v.218 (with Harris 1989b: 124).

⁶⁷ [[Camodeca (1999: no. 51) (superseding previous editions).]]

⁶⁸ For Juvenal's evidence about Rome itself see Courtney (1980: 112). On Roman vegetables: André (1961: 13–51).

⁶⁹ See Petronius, *Sat.* 40, Martial viii.33.11, etc. They are the only common foodstuff at Pompeii which was definitely imported: Meyer (1988: 200, 215).

⁷⁰ Tchernia (1986b: 293). At Pompeii too the *garum* amphorae far outnumber the olive-oil ones: Manacorda (1977: 121, 131).

⁷¹ See Ponsich and Tarradell (1965), Curtis (1978), Ponsich (1988).

Empire included three cities which were each twice the size (or nearly so) of the largest cities which existed in Christian Europe around 1600. But there were other important differences too, one of which was the relative lack of a commercial bourgeoisie in the Roman Empire, a fact which was closely linked to the very large role in Roman commerce of slaves and freedmen. Another difference is that the Romans carried on an extensive slave trade in order to maintain this element in their economic and social structure.

The common notion that the slave population of the Empire now consisted mostly of the children of slaves cannot be sustained.⁷² In any case such slaves might be bought and sold, like those who became slaves by other means such as through capture in war, through the enslavement of foundlings, or through importation across the frontiers.

Augustus had probably expected that his 2 per cent tax on slave sales would produce annual revenue on the order of five million sesterces, which implies that as many as a quarter of a million sales were believed to take place each year.⁷³ Subsequently the number of prisoners-of-war who came on to the market in an average year declined (though it could sometimes be very high: the total numbers enslaved in Trajan's Dacian wars and at the end of Bar-Kochva's revolt were in six figures). In all probability, however, neither demand nor supply declined significantly at least until late in the Antonine period.

While Rome and Italy undoubtedly constituted the largest regional market, slaves were in demand all over the Empire. The main areas of 'surplus' within the Empire were Thrace, Asia Minor, with the exception of the *provincia Asia*, and Syria. Slaves were imported from time to time across practically all the frontiers, and regularly through Palmyra into Syria, as we know from the local fiscal law of 137.⁷⁴ The route through Zarai into Numidia, which we happen to know of from the Zarai Tariff of 202,⁷⁵ was merely one of the other channels of importation. Slaves were bought and sold in every Roman city, as fairly extensive testimony shows. However the most active centre of the trade, apart from Rome itself, was Ephesus,⁷⁶ which drew most of its slaves from the interior of Asia Minor and probably still exported them in large numbers to Italy.

Imperial intervention was slight, as far as we can tell, even though the imperial household must itself have been a large source of demand. The sales tax had risen to 4 per cent by AD 43,⁷⁷ and probably stayed at that level. By the time of the Zarai Tariff, however, the rate of duty charged on the

⁷² For this and the other views expressed in this section see Harris (1980a; 1999) [[Chapters 3 and 4 respectively]].

⁷³ The tax: Dio iv.31.

⁷⁴ *OGIS* 629 = *CIS* ii.3.1.3913. On the import of slaves from Colchis see Braund and Tsatskheladze (1989).

⁷⁵ *CIL* VIII.4508.

⁷⁶ Harris (1980a: 127); see also Achilles Tatius v.17.

⁷⁷ *CIL* VI.915 = *ILS* 203; cf. Tacitus, *Ann.* xiii.31.

importation of slaves was lower, at least in Numidia, than for any other major commodity, which can only have come about because the government wished to improve supply.

Metal ores and artifacts

Extraordinarily little attention has been given to forging any synthesis out of the many fragments of evidence we possess about trade in metals and manufactured metal goods under the Roman Empire. The aggregate of production was clearly very large. Pompeian archaeology illustrates this well: household vessels and utensils of every kind, farm implements, craftsmen's tools, fittings for vehicles and harnesses, jewellery and ornaments, statues, locks, nails, water pipes, the paraphernalia of gladiatorial combat—even this is not an exhaustive list of the classes of Pompeian metal artifacts. Other reasonably well-to-do cities all over the Empire will have had a comparable need for metals, and the needs of the army were also very great.⁷⁸

The principal metals in question were gold, silver, copper, tin, bronze (the alloy of the preceding two), lead and iron. Most of the ultimate sources of supply were the property of the emperor.⁷⁹ However extraction seems to have been mainly in the hands of private contractors, as was the shipping of ore and of metal ingots.⁸⁰ Metals then made their way into the hands of town craftsmen, who for the most part seem to have worked on a modest scale in the places where the products would be sold. Even a small community such as Tebtunis had its own goldsmith, bronze-worker, strigil-maker, lead-worker, tinsmith and maker of arms and breastplates.⁸¹ There was of course some long-distance trade in manufactured goods, including some export across the frontiers.⁸²

The richest resources were concentrated in a few provinces, except for iron.⁸³ For gold the primary sources seem to have been Iberia, Dalmatia, and after Trajan's conquest, Dacia. Silver came particularly from Iberia and Asia Minor. Iberia, once again, was a prime source for each of the principal base metals. Gaul and Cyprus were the other main sources of copper. Since bronze was produced in many places in Italy and the provinces,⁸⁴ it can be

⁷⁸ For the range of uses see Healy (1978: 237–53), Gaitzsch (1985: 188–9).

⁷⁹ De Martino (1980: 316).

⁸⁰ Extraction: Greene (1986: 147). Shipping, at least to Ostia: Meiggs (1973: 271–2).

⁸¹ Johnson (1936: 343). On the metal-working workshops of Pompeii see Grafls (1988).

⁸² Within the Empire: note Gabler (1983: 108–9), Kunow (1985). For export of metal products to Germany see Dąbrowski and Kolendo (1972), Kunow (1983); to the area covered by the *Periplus*, Casson (1989: 27–9).

⁸³ For sources of ore see still Blümner (1875–87: 4.7–100); for mines in Europe see O. Davies (1935), Dusančić (1977: 63–79) (the upper Danube provinces), Domergue (1987) (Spanish provinces). For gold sources see Healy (1989: 12). [[For gold, silver and copper see Wilson (2007).]]

⁸⁴ Pliny, *NH* xxxiv.96.

presumed that many sources of copper and tin were exploited. Lead came from Sardinia, Britain and Attica as well as Iberia.⁸⁵ While iron was to be found in almost every part of the Empire,⁸⁶ the large-scale production occurred in Iberia, Gaul, Italy, Noricum, Dacia and Asia Minor.

Minerals were an important part of the emperor's wealth and were administered on his behalf by a network of procurators. But the main responsibilities of these officials concerned mining,⁸⁷ and whether the state involved itself with manufacturing in any way, or with the satisfaction of civilian needs for metal products, is obscure. Two procurators concerned with metals are attested at Ostia, another at Rome,⁸⁸ and it may well be that one of their functions was to ensure that Rome's supplies were sufficient. Not that we have any clear sign of government interest in this matter. And it appears that in the first part of our period the government was still content to rely on private workshops for all or most of the army's supply of weapons and other artifacts.⁸⁹ |

Textiles

Wool and linen, and also silk, require discussion. Poor people in the country might dress in skins, but the demand for wool, to be used for clothing, bedding, and other purposes, was felt throughout the Empire. Practically every province possessed ample flocks of sheep of one variety or another, and hence, as in the case of the trade in wine, the volume of long-distance trade—whether of raw wool, yarn, cloth, or finished goods—needs to be looked at carefully. In this case the material remains, those at any rate which have been published and analysed, are too slight to help much.⁹⁰

⁸⁵ Boulakia (1972).

⁸⁶ Pliny, *NH* xxxiv.142. Nonetheless iron bars have been found in a number of Roman wrecks: Gibbins and Parker (1986: 293).

⁸⁷ *CIL* II.1179 = *ILS* 1591 is suggestive: *confectores aeris*, producers of bronze, making a dedication to an imperial freedman who is 'proc. montis Mariani' [[an important mining district]].

⁸⁸ Ostia: *CIL* XIV.52 = *ILS* 1592 and XIV.4459 = *ILS* 1442 (iron). Rome: *CIL* VI.31863 = *ILS* 9011 (iron).

⁸⁹ See MacMullen (1960) and Oldenstein (1985: 83–6), who argues that such legionary workshops as existed in this period mainly did repairs, and Kunow (1986: 741). On the other hand Bishop (1985a) believes that in the western Empire equipment was all made in legionary *fabricae* throughout this period; cf. Scott (1985: 176). Tacitus, *Hist.* ii.82 and Dio lxix.12.2 seem to imply that in Syria and Judaea there were private workshops which were at least capable of producing large quantities of arms and armour. *ChLA* x.409 reveals a military *fabrica* with a large labour force in second- or third-century Egypt. There was probably a change during the second century: cf. *Dig.* 50.6.7 (Tarruntenus Priscus).

⁹⁰ Even when the remains from a particular region have been carefully analysed, as by Wild (1970), the results have not so far been significant for the study of trade.

Certain fine material and certain highly regarded products were naturally traded as luxuries,⁹¹ and according to one account, there was no kind of 'mass market' for clothing, except for the military market.⁹² It would be a reasonable guess that many households aimed for self-sufficiency, making clothes—if not always spinning and weaving—for themselves. There is, however, a good deal of evidence that clothing was very commonly purchased.⁹³ The rather wide diffusion of *centonarii* in the western Empire is significant in this respect, if it is correct to see them as sellers of cheap clothing judged suitable for slaves. At all events, it was once again the big cities which were the main cause of long-distance trade. Rome itself regularly imported woollen goods from distant places.⁹⁴ And as we would expect, the army had to seek supplies from far away, the Cappadocian and Judaeae legions in Egypt for instance.⁹⁵

When Pliny evaluates the best varieties of wool, saying that Apulian wool is the most highly praised, and so on,⁹⁶ he does not convey very much about the main currents of commerce in this commodity. There is no guarantee at all that 'Apulian' wool was produced only in Apulia, and Pliny's interest is in any case in the premium end of the trade. Strabo seems more informative, suggesting that Belgica, Turdetania (in the province of Baetica), Liguria, and the Insubrian area of northern Italy, together with Patavium, were important sources of exported wool or woollen goods.⁹⁷ In the east, one exporting area seems to have centred on the twin Phrygian cities of Hierapolis and Laodiceia, and Egypt may have been another.⁹⁸

Linen was widely used, at least in the eastern Empire, for the clothing of all classes. Probable sources of large quantities of linen exports include Egypt, Gallia Comata, and Spain.⁹⁹

⁹¹ Frayn (1984: 163) sees most of the long-distance wool trade as 'luxury' trade, but observes (pp. 170–71) that the mass of detail about the textile trade in Diocletian's Edict implies that the scale was fairly large. The best account of textile production in the Empire as a whole is [[now probably Walton Rogers et al. (2001).]]

⁹² Frayn (1984: 154, 163).

⁹³ Jones (1960: 184 = 1974: 352).

⁹⁴ From Patavium: Strabo v.213 ('every kind of clothing'), 218.

⁹⁵ Unfortunately we do not know how the prices paid related to market prices. For a chiton and four cloaks woven and made up at Philadelphia for the army in Cappadocia see *BGU* VII.1564 (AD 138). Five white cloaks from Socnopaiou Nesos for the army in Judaea: *P.Ryl.* II.189 (AD 128). Apparently the army in Moesia obtained some of its clothing in Gaul: see Fink (1971: no. 63, ii.18) (Trajanic).

⁹⁶ *NH* viii.190–91.

⁹⁷ Belgica: Strabo iv.197; Drinkwater (1977–8), Wightman (1985: 149–50). Turdetania: Strabo iii.144. Liguria: iv.202, v.218. Insubres: v.218. Strabo's account may of course have been outdated by now.

⁹⁸ Concerning Laodiceia and Hierapolis see Pleket (1984: 31). Van Minnen 1986 argues from *P.Oxy.Hels.* 40 that in the span of five days, during one year in the second or third century, Oxyrhynchus exported 1,956 garments, and from this that it exported some 100,000 a year; it is not specified that the material was wool. However, the numerous customs documents from the second-century Fayum give no hint that it was a big textile-exporting area (cf. Drexhage 1982: 74).

⁹⁹ Egypt: Pliny, *NH* xix.7–8, 13, *CIL* IV.3340 c. Gaul: Pliny, *NH* xix.7–8. Spain: Pliny, *NH* xix.10. For Tarsus as a linen-producing centre see Cracco Ruggini (1980: 60–64), Pleket (1984: 31–2).

There was also a certain amount of long-distance trade in silk. Cos was the Mediterranean source, but it seems to have been supplanted or supplemented, at least for a time, by imports brought by various routes from China.¹⁰⁰

Timber

The Roman world was heavily dependent on wood, for construction, for ship- and boat-building, for furniture, for writing-tablets, and for charcoal and firewood (wood was the fuel for all Roman baths). To what extent long-distance trade was involved remains unclear, in spite of some important studies devoted to timber resources.¹⁰¹ Certain texts give evidence of an elaborately organized system of production,¹⁰² and indeed demand cannot have been met without such a system. Importing of timber over long distances may have taken place on a large scale. Yet most regions of the Empire had extensive forests, and most people will no doubt have been willing to take Vitruvius' advice and replace fir or spruce, if they were not locally available, with cypress, poplar, elm, or pine.¹⁰³

It is regrettable that there has not been more scientific analysis to determine the woods used in the Vesuvian cities, at Ostia and at other places where material survives. The literary sources give the impression that Rome itself, the principal market, drew all its timber, except for a few special woods for the luxury market, from Italy.¹⁰⁴ Of woods from outside Italy the most important in terms of value was probably citrus for furniture-making, which in our period came from Mauretania.¹⁰⁵ Elsewhere in the Empire timber was exported,¹⁰⁶ but the scale is difficult to guess. The very big cities needed timber from far away, and other cities perhaps not much from a great distance—but here there is once again a great deal of still unanalysed archaeological evidence.

Pottery and glass

Pottery has occupied a large place in the modern study of Roman trade, primarily because of its survival capacity. Archaeologists often give the

¹⁰⁰ Cos as a source in this period: Pliny, *NH* xi.76–78; however, Juvenal viii.101 is the last reference (Sherwin-White 1978: 303). For the view that silk importation benefited from peaceful conditions along the roads from China in the period from about 90–130, see Thorley (1971). Chinese silk is often mentioned by Roman writers from Augustus' time onwards.

¹⁰¹ Giardina (1981) (concentrating on southern Italy), Meiggs (1982). [[See the Addendum.]]

¹⁰² Dionysius of Halicarnassus xx.15.2 (for the Sila forest), Pliny, *NH* xvi.23, 42, etc.

¹⁰³ Vitruvius i.2.8.

¹⁰⁴ Meiggs (1982: 243–58).

¹⁰⁵ *Ibid.* 286–91; cf. Pliny, *NH* xiii.91–102 (the highest price he records for a citrus-wood table was 1.3 million sesterces, xiii.92). Seneca the philosopher was alleged to have owned 500 citrus-wood tables (Dio lxi.10.3).

¹⁰⁶ See e.g. Pliny, *Ep.* x.41, Dio Chrysostom xl.30 (both referring to Bithynia). For imports by sea to Ephesus, apparently on a large scale, see the inscription published by Keil (1959) = *IGSK* XI.1.23.

impression of thinking that trade in pottery was an important economic phenomenon, and some have explicitly defended this point of view.¹⁰⁷ This is not a point of view to be rejected out of hand: we should recall that in some parts of the Empire, *negotiatores artis cretariae*, pottery merchants, make up a substantial proportion of all epigraphically attested traders.¹⁰⁸

A trade in high-quality pottery is no more difficult to understand than a trade in high-quality wine. Fine pottery was regularly imported over long distances. Whether pottery of middling or cheap quality travelled long distances for purposes of trade is more doubtful. There is a certain unjustified tendency to assume that similar wares must have come from a single centre of production.¹⁰⁹ However, it is widely agreed that the famous red-glazed *terra sigillata* ('samian') was sometimes exported long distances from the places where it was made.¹¹⁰ While *terra sigillata* was not destined for the poor, it was not the extreme of luxury either.¹¹¹

What made trade in pottery of this quality possible was not that merchants somehow managed to eliminate transport costs by shipping pottery with other goods,¹¹² but the ability of some of the producers to satisfy a more or less middle-class clientele which was not content with local products. The centre of production moved from Italy to southern Gaul (above all, La Graufesenque) and later, towards the end of the first century, to central Gaul (chiefly Lezoux) and the German provinces, probably in part because of transport costs.¹¹³ Almost from the beginning of our period a considerable volume of north African red-slip ware ('sigillata chiara A') was exported to many areas of the western Mediterranean.¹¹⁴ Besides transport costs, other factors which are hard to specify influenced the development of these new trading patterns,¹¹⁵ but in any case throughout our period *terra sigillata* was shipped considerable distances in the western Empire.

In the case of 'firm-lamps' (*Firmalampen*), simple and highly uniform terracotta lamps, it is possible to see how a geographical distribution of finds

¹⁰⁷ See Pucci (1983: 110–11); but even he writes that 'pottery was never a pivotal sector of the economy in antiquity' (p. 109).

¹⁰⁸ Cf. Raepsaet (1985: 74) on Belgica and the German provinces.

¹⁰⁹ So, for instance, with so-called 'Pompeian Red' ware: Peacock (1977: 160).

¹¹⁰ For a survey of the production and distribution of *terra sigillata* see Peacock (1982: 114–28). The wreck *Culip IV* (Nieto 1986) now seems to show that *terra sigillata* could be a ship's principal cargo.

¹¹¹ But for some imported *terra sigillata* on quite modest sites see e.g. Griffiths (1987: 286) (Northamptonshire).

¹¹² Mattingly (1988b: 53), among others, claims that the eventual 'dominance' of African red-slip ware in the western Mediterranean can only be explained if it rode 'pick-a-back' on other cargo; cf. Whittaker (1985: 54). No doubt this method did help the pottery trade to some extent; cf. Nieto (1988).

¹¹³ Quality declines in the later production at La Graufesenque, in the Flavian period (Greene 1986: 161). Perhaps La Graufesenque prices were being undercut (but other explanations are possible). For the location of the production centres see Peacock (1982: fig. 60, p. 117).

¹¹⁴ Carandini (1970: 107–8).

¹¹⁵ Cf. Pucci (1983: 110).

which at first sight seems to demonstrate long-distance trade is more probably to be explained by other means: branch workshops, and also unauthorized local imitations.¹¹⁶ These lamps were probably very cheap and except in unusual circumstances could not be transported in bulk over long distances as a profitable enterprise.

A striking feature of the *Periplous Maris Erythraei* is the frequency with which it mentions exports of glass from Roman Egypt eastwards.¹¹⁷ But notwithstanding the survival of a fair quantity of Roman glass, a history of trade in this commodity can scarcely be written. By Pliny's time, the places of manufacture, which had originally been concentrated in Egypt and Syria, had spread to include sites in Italy, Gaul and Spain,¹¹⁸ and most provinces probably produced some; on the other hand, the special conditions which were required might suggest that most glass was produced in relatively few centres.

Construction materials other than timber

Bricks, tiles, and stone were all objects of trade, but for the most part only marble seems to have travelled truly long distances. The market for marble was clearly willing to pay high prices, and it was commonplace for marble to be brought many kilometres over land (for instance from the important quarries at Docimium in Phrygia), and most of the length of the Mediterranean by sea.¹¹⁹ This was not just a question of satisfying the tastes of the emperor; so much of certain marbles was reaching Pompeii and Herculaneum by 79 from Numidia and from Teos that an expert scholar concluded that there must have been 'regular channels of supply' for the private market.¹²⁰ Under the principate the marble trade seems highly organized,¹²¹ and since all or most of the quarries were imperial property, it was probably the emperor's *familia* which imposed this degree of organization and profited from it.

The market for other building materials is likely to have been no more than regional at most. This emerges, for instance, from a study of stamped bricks in the northern Adriatic region.¹²² Yet stamped bricks made in the vicinity of

¹¹⁶ Harris (1980b) [[Chapter 5]].

¹¹⁷ Sections 6–10, 17, 39, 49, 56.

¹¹⁸ Pliny, *NH* xxxvi.194; cf. Harden (1970: esp. 48–51, bibliography: 67–71); add e.g. Gabler (1983: 109–11) on Italian glass sent to Pannonia. [[For the wreck of a second-century ship carrying mainly glass at Les Embiez in Provence, see the Addendum.]]

¹¹⁹ J. B. Ward-Perkins (1980: esp. fig. 1, p. 27) shows the distribution of sarcophagi made from Docimium marble, and see Fant (1989). For transport of marble by sea, see Pliny, *NH* xxxvi.2–4, and the report on the Saint-Tropez wreck by Benoit (1950).

¹²⁰ Ward-Perkins (1980: 39).

¹²¹ Cf. *ibid.*, esp. 25.

¹²² Buora (1985). See also Matijašić (1983: 990–91). The gradual disappearance of these Pansiana stamps after AD 68 suggests that they were replaced by local products.

Rome were used as far away as Tripolitania in the second century, and apparently arrived there as objects of trade.¹²³

Papyrus

Although wooden tablets and potsherds were the everyday writing materials of the Roman Empire, papyrus was also in heavy demand among officials and the well-to-do.¹²⁴ The scale is unknowable, but we should think of tens of thousands of rolls a year being exported from Egypt, which was always the virtually exclusive source. The extent of government involvement in production or distribution is surprisingly little attested. Under Tiberius, the Senate had intervened to regulate the supply at Rome,¹²⁵ but it is likely that both then and later trade in papyrus was normally in private hands.

Exotic plant products

It would be a complex matter even to list and to investigate the uses of the large number of commodities—mainly spices, ingredients for medicines and perfumes, dyes, incense—which fall under this heading.¹²⁶ Dioscurides wrote, probably during Nero's reign, five books on *materia medica*; they assume as a matter of course that it will be drawn from an enormous area stretching from Britain to India. Plant products came to the Romans from as far away as Tanzania and north-eastern India. Large sums of money | were sometimes involved. The known prices of some products make this plain, and in addition we happen to learn from a mid-second-century papyrus of a single import shipment, in which the most costly known components were nard and ivory, valued at 1,154 talents (probably equal to at least six million sesterces of imperial currency).¹²⁷ This was more than the retail value of the grain carried by twenty large merchant ships.

¹²³ See Helen (1975: 18), referring in particular to *AE* 1967 no. 538 (six different stamp types on the same site). Cf. Tomber (1987). For a sceptical view see Steinby (1981: 244–5).

¹²⁴ On other writing materials see Harris (1989a: 193–5). For the importance of papyrus: Pliny, *NH* xiii.68. See also Lewis (1974: 21–32) on its use for purposes other than paper-making; pp. 121–2 on the organization of production.

¹²⁵ Pliny, *NH* xiii.89.

¹²⁶ For a list of those mentioned in the *Periplus* see Casson (1989: 42–3). The other important contemporary sources, besides Pliny, are Dioscurides and Galen. See Miller (1969), Müller (1978), Raschke (1978: 651–3), Groom (1981).

¹²⁷ Harrauer and Sijpesteijn (1985: verso col. ii, lines 27–9); cf. Casson (1986a; 1989: 35). The papyrus being damaged, most of the cargo cannot be identified. [[For more on the 'Muziris' papyrus see the Addendum.]]

Ivory, pearls, and precious stones

In the main these articles were imported into the Empire from India or east and central Africa. The *Periplus* mentions particularly often places where tortoise-shell and ivory could be acquired. As usual, almost everything to do with volume escapes us. The elder Pliny describes having seen Lollia Paulina, former wife of Caligula, at a banquet ‘covered with emeralds and pearls... their total value amounting to forty million sesterces’,¹²⁸ and the order of magnitude can easily be believed. While Lollia Paulina was exceptional, the demand for precious materials in this category clearly spread right across the upper class and accounted for a financially important branch of Roman commerce.¹²⁹

A much-discussed pair of texts in the elder Pliny suggests that in his time Rome had a serious trade imbalance with Arabia, India, and China, at least 100 million sesterces a year.¹³⁰ This should be accepted as reliable information, but on the other hand Pliny was probably not attempting to describe a *net* imbalance at all. From the point of view of people who approved of economic self-sufficiency and deplored luxuries, such an outflow of funds was in itself worthy of note.¹³¹

THE GEOGRAPHICAL PATTERNS OF TRADE

Patterns are discernible in the vast and variegated history of trade under the Roman Empire. A very large amount of trade took place over long and medium distances such as from one province to the next. What matters is of course mainly value, not tonnage,¹³² though sometimes | cargoes of great bulk were involved. Commodities travelled long distances if they could be sold at a profit, a possibility which depended on many different factors. Price elasticity was the key. This could make not only a desirable luxury, a precious stone, say, or an exceptionally qualified slave, saleable far from its source; it affected any

¹²⁸ Plin. *NH* ix.117. On precious stones and minerals imported from India see Warmington (1974: 235–60).

¹²⁹ On ivory imports see Raschke (1978: 905).

¹³⁰ Trade with India, mainly the import of luxuries, caused the outflow of 55 (or 50) million sesterces a year (*NH* vi.101), and 100 million a year if Arabia and China were included (xii.84). These, he says, were minimum figures.

¹³¹ See Veyne (1979a). Raschke (1978: 634–7), among others, has argued that the figures are fictitious, but they can without difficulty derive from information about the revenue from the 25 per cent import tariff levied on the eastern frontier. At least in the second passage there is a moralistic concern (*pace* Crawford 1980: 207): Pliny is against the outflow of money because of what it was being spent on.

¹³² Cf. Braudel (1972: i.442–3).

commodity which could not be produced or substituted for locally in adequate quantity. Willingness to pay depended on the tastes as well as the needs of the customers: pottery and textiles of good but hardly spectacular quality sometimes travelled noteworthy distances to market and were evidently sold at a profit.

Large cities could satisfy few if any of their principal needs locally. Profit-oriented farmers near to such cities no doubt concentrated on perishables.¹³³ The metropolitan cities could only exist because essential commodities were brought to them from enormous catchment areas. Thus the main geographical patterns of long-distance trade were determined by the location of these markets and of the centres of production or supply. When a commodity could be produced in many different regions, wine for instance, the economics of transport had a powerful effect. The big concentrations of population, wishing to satisfy their needs as economically as possible, generally did so from the producing areas which could ship to Rome, or wherever the market might be, at relatively low cost. But this was not the only factor: the efficiency of producers also enters into the matter, and we may presume that well-capitalized and well-run estates and other enterprises had an advantage.¹³⁴

Army units in the provinces were another stimulus to trade. Since legionaries and their officers were paid regularly and paid reasonably well, they formed a not insignificant market. The total of military manpower was on the order of 300,000 men. It was a strange sort of market, since the government had a special interest in making sure that its needs were met, at least as far as food, clothing, and equipment were concerned. By the Severan period the army's civilian suppliers enjoyed a tax exemption.¹³⁵ It is far from clear, unfortunately, how this market functioned, but in any case a market does not cease to be a market simply because suppliers receive special privileges from the government.

The army could afford goods brought from afar because it lived on tax revenues. It is tempting to say the same about the big cities, certainly about Rome itself. But matters were not so simple, since at least in the early Empire central Italy was a noteworthy manufacturing area as well as a 'tax-receiving' area.¹³⁶ Alexandria and Carthage did not live in the main from tax | revenues. Their enormous size is to be explained by a combination of factors: they benefited from Rome's grain purchases in their respective provinces and they were both the places of residence of well-to-do *rentiers*; they were also centres of production and trade.

¹³³ Cf. Carandini (1988: 339–57), Mattingly (1988b: 50).

¹³⁴ Concerning the case of olive oil production, cf. Mattingly (1988b).

¹³⁵ Paulus in *Dig.* xxxix.4.9.7.

¹³⁶ On Puteoli as a port which exported manufactured goods under the Empire, see Pucci (1985: 277), appositely citing Strabo xvii.793. On Rome itself as a great *ergasterion* (workshop) see Aelius Aristides, *To Rome*, 11.

We must continue to distinguish carefully between the Roman economy and what came after the Industrial Revolution: in the Roman world, as Hopkins has pointed out, we shall not find ‘regular routes of large-scale exchange between regions specializing in the production of an agricultural surplus and regions specializing in the production of manufactures’.¹³⁷ A pattern of trade which we might expect to find is the export of manufactured goods to economically and technically backward regions both inside and outside the Empire in exchange for raw materials.¹³⁸ The first half of the equation is easier to document than the second. Manufactured goods moved outwards, pottery to Pannonia and Britain for example, weapons to independent Germany, manufactured metal goods and glass from Egypt to the east, but for most of its raw materials the Roman economy did not depend on the most backward regions.

An important set of trade mechanisms which co-existed with the day-by-day transactions on quaysides and in the marketplaces and shops of the cities consisted of fairs and periodic markets. They are attested in many parts of the Empire (for instance in Campania, Phocis, the province Asia, Africa Proconsularis) and probably multiplied in the era from the Flavians to Hadrian.¹³⁹

Our attention has been concentrated on long- and medium-distance trade, but of course every Roman city was also a local trading centre, receiving the products of the surrounding countryside and sending out local artifacts as well as long-distance imports. Similar functions could be fulfilled by secondary ‘central places’, and it is to be noted that small settlements were often provided with *fora*, evidently for commercial purposes.¹⁴⁰

PERSONNEL

In the foreground stands the merchant (L. *negotiator*, *mercator*, Gk. *emporos*),¹⁴¹ but the picture contains many other characters, some of them | with roles

¹³⁷ Hopkins (1978b: 49).

¹³⁸ Cf. Coarelli (1965: 1012), Miller (1969: 203).

¹³⁹ MacMullen (1970), Gabba (1975), Andreau (1976), Shaw (1981), Pavis d’Escurac (1981), Nollé (1982), De Ligt and de Neeve (1988), [[and Lo Cascio (2000), where De Ligt showed that the government was not as reluctant to grant the right to hold markets as is often supposed.]]

¹⁴⁰ For cases in Roman Germany see von Petrikovits (1985: 308).

¹⁴¹ Most scholars think that under the principate a *negotiator* was a merchant who operated on a larger scale than a *mercator* (in older Latin *negotiator* had had a different meaning), though the latter was normally involved in wholesale trade. For attempts to distinguish the two terms see Rougé (1966: 290–91), Kneissl (1983: esp. 76–81). Händel (1985: 500) claims that both terms usually but not always refer to wholesale merchants. The terms probably overlapped a good deal, but *negotiator* may have been felt to be more respectful, which might explain its especial predominance in inscriptions (pointed out by von Petrikovits 1985: 299).

which are hard to describe. The *negotiator/emporos* himself might operate in all sorts of different ways. He might, for instance, travel with his own goods on a ship owned by another, or he might send a subordinate, normally a slave or freedman, in charge of a consignment. Alternatively he might own and captain a ship himself.¹⁴²

A merchant was likely to deal in mixed cargoes, as Trimalchio was supposed to have done on his famous voyage, and as the author of the *Periplus Maris Erythraei* anticipates. Surviving wrecks normally turn out to have carried several commodities, quite apart from those which would have disintegrated with the passage of time: thus *Port-Vendres II* contained tin, lead, copper, oil, wine, fish sauce, almonds, and pottery.¹⁴³ Admittedly these goods belonged to a number of people, and there is no guarantee that any particular wreck was shipping the goods of a single merchant. However, shipping a mixed cargo was an obvious strategy to follow, since information about market conditions at the point of sale could never be up-to-date, and this was the normal practice in pre-modern trade. Nonetheless some individual merchants specialized, either in a particular commodity such as wine, slaves, or pottery,¹⁴⁴ or (perhaps less commonly) in a product or products from a single region.¹⁴⁵

In terms of status, many merchants and many successful ones were freedmen or slaves, though plenty of others were free-born. An impressionistic judgement might be that the first of these groups was the largest. In any case Roman law, and presumably other legal systems in use in the Roman Empire, made it practical for a slave to be a merchant, even though in legal theory he was not a person.¹⁴⁶ Even those merchants who were free-born seldom seem to have been of curial, let alone equestrian, status. From inscriptions we know of extremely few merchants who were city councillors; in Gaul such a thing may have been fairly common,¹⁴⁷ but in general the two callings were not often conjoined.¹⁴⁸ Thus the Roman world did not possess a powerful commercial bourgeoisie of the kind which was to be found in early-modern, pre-industrial cities in Italy and the Low Countries.¹⁴⁹ But this by no means implies, as has sometimes been suggested, that trade itself was unimportant.¹⁵⁰

¹⁴² Petronius, *Sat.* 101.

¹⁴³ Colls et al. (1977).

¹⁴⁴ Cf. Wisseman (1984). This was perhaps commonest in the larger trading centres such as Lugdunum.

¹⁴⁵ Such people deserve further investigation; cf. Rougé (1966: 281).

¹⁴⁶ Slave *emporoi* as a common phenomenon: Ps-Plutarch, *De lib. educ.* 7 = *Mor.* 4b, with Pleket (1984: 21 n. 90). For the slave's legal position see Rougé (1966: 421–2).

¹⁴⁷ On the Fadii of Narbo in the second century, see Cels (1978). Two *nautae Ararici*, captains or rather boat-owners on the River Saône, were respectively a Roman *eques* and a city decurion: *CIL* VI.29722, XIII.11179 (and see further Pleket 1984: 24 n.104). For merchants holding local office in cities of the eastern Mediterranean see Pleket (1983: 139–40).

¹⁴⁸ Cf. *Dig.* L.2.12 (Callistratus).

¹⁴⁹ Pleket (1984: esp. 10–12).

¹⁵⁰ Cf. Veyne (1979b: 277).

Among the Romans it was largely freedmen and slaves, the former with their own rather hollow structure of civic distinctions, who managed the commercial enterprises.

It should come as no great surprise to anyone who has studied the status of women in the Roman world that while the vast majority of merchants were men, it was also quite possible for a woman to be a merchant in her own right.¹⁵¹

Some scholars have maintained that behind the facade of freedmen and other merchants of low social status there lurk senators, knights, and office-holders from the cities of the Empire with extensive commercial interests.¹⁵² The legal and institutional mechanisms were available, and sometimes we can get a glimpse of them in action. The very size of certain investments, those for example which were necessary for the construction of the largest merchant ships, suggest that members of the upper elite were involved. The problem is one of scale, or rather to know what was normal. The members of the upper orders were normally landowners, and they took an interest in the commercial aspects of running their estates, such as the selling of the vintage to *negotiatores*.¹⁵³ The emperor himself, through his *familia*, undoubtedly had the largest commercial income of all.¹⁵⁴ In a sense, commerce was no more than a sideline for almost all members of the various social elites—they did not work at it day by day; but it was, as has been said, a sideline ‘with structural significance’—and not something that they would willingly have done without.¹⁵⁵ When Pliny remarks casually that only a small proportion of his money is lent out,¹⁵⁶ we cannot tell what sort of loan or loans were in question; but in any case the commercial interests of various senatorial families can be conjectured.¹⁵⁷ Upper-class Greeks were perhaps a little less squeamish than Italian senators: Dio Chrysostom notes that the rich support themselves by means of usury, tenements, leasing slaves, and *by ships*.¹⁵⁸ And within each level of the elite, diverse attitudes and varying levels of interest in commercial ways of making money were to be encountered. One could make money from trade while being best known as a professor (‘sophist’) and even while enjoying the reputation of not being acquisitive.¹⁵⁹ It seems probable that in most

¹⁵¹ The Claudian government took female grain-shippers into account: Suetonius, *Claud.* 19. Female merchants: see e.g. Panciera (1980: 244–5), and for two who operated in the Red Sea, probably on a largeish scale, *SEG* VIII.703.

¹⁵² This is the hypothesis explored by D’Arms (1981), Schleich (1984: 53–70).

¹⁵³ Pliny, *Ep.* viii.2.1.

¹⁵⁴ Specific evidence that imperial freedmen were involved in the grain trade: [[Camodeca (1999: no. 51)], with Casson (1984b: 104–7).

¹⁵⁵ Pleket (1983: 136); cf. (1984: 13).

¹⁵⁶ Pliny, *Ep.* iii.19.

¹⁵⁷ See esp. D’Arms (1981: 156–62), Schleich (1984: 44–6). On the Laecanii, see the thorough but necessarily inconclusive paper of Tassaux (1982).

¹⁵⁸ Dio Chrysostom vii.104; and see Ps.-Plutarch, *De lib.educ.* 7 = *Mor.* 4b. Cf. Pleket (1984: 14–15).

¹⁵⁹ See the examples drawn from Philostratus by D’Arms (1981: 4, 164–5).

regions of the Empire the city elites, like knights and senators, invested only a limited proportion of their money and a still more | limited amount of their time in trade, mainly doing so through intermediaries. Yet they were the source of a large proportion of the Empire's investment capital.

Against the hidden involvement of the elite it can be argued that a vast range of evidence demonstrates the repugnance of the upper Roman elite for direct concern with commerce, and furthermore that the almost ubiquitous freedmen *negotiatores* can just as well have been operating on their own accounts as on behalf of well-born patrons.¹⁶⁰ The dispute is one of nuance and degree and is hardly likely to be settled in a definitive way.

It was in any case common practice for well-to-do Romans to finance their freedmen and slaves in commercial enterprises. Furthermore, Roman law had already developed mechanisms for the vertical organization of commercial enterprises by defining the position of the *exercitor*, generally a ship-owner, in relation to the activities of his subordinates, the position of the *institor* or manager in relation to his superior, and the position of *servi communes* (jointly owned slaves) with respect to their masters.¹⁶¹

An expectable weakness of the Roman economy is that most enterprises are likely to be relatively short-lived, lasting a few decades at most. The principal players are all involved in an elaborate game of social mobility which will lead a successful merchant or his son to give up his original calling and perhaps turn to lending money at interest.¹⁶² Certainly we have very little evidence for the continuity of commercial enterprises, but this may be largely attributable to the nature of our sources. And some fairly impressive cases are known: the Decimi Caecilii, for instance, were active in the olive oil business before the destruction of Pompeii and at least as late as 154.¹⁶³ Even more impressive, if genuine continuity of ownership was involved, were some of the enterprises which made terracotta lamps: some of them lasted from the mid-first or early second century well into the third.¹⁶⁴ But it should be noted that the short life-expectation of business enterprises also characterized early modern pre-industrial economies.

In addition to those who carried on long-distance trade, there were of course men and women, probably far more numerous, who bought and sold commodities between one community and another on a relatively small scale, such as the men who are recorded in the papyri as dealing in small quantities of textile goods.¹⁶⁵ |

¹⁶⁰ On this point see Garnsey (1981; 1983: 129).

¹⁶¹ See above all *Dig.* xiv.1 and xiv.3. On the law concerning the commercial activities of freedmen see Schiller (1935). For the employment of *servi communes* in trade see Di Porto (1984).

¹⁶² Cf. Petronius, *Sat.* 76.9, with D'Arms (1981: 100–108).

¹⁶³ Broughton (1974: 20); for this family see also Tchernia (1964: 437–9; 1980: 156), Remesal Rodríguez (1983: 103–4).

¹⁶⁴ Harris (1980b: 143–4) [(above, pp. 139–140).]

¹⁶⁵ Cf. Wipszycka (1965: esp. 74–8).

COMPANIES AND GUILDS

The ordinary merchant often seems to have been an individual with subordinates but no partners, and this is held to differentiate Roman commerce from European commerce of, say, the sixteenth century. It certainly seems to be characteristic of a merchant that he travels on his own behalf,¹⁶⁶ which suggests small businesses without partners. But partnerships, apparently limited in most cases to two or three men, were quite common, and *societas* received very detailed attention from the jurists.¹⁶⁷ They might be of brief or unlimited duration. The use of *servi communes* gave an added element of flexibility. Whether this system was a constraint on commerce by comparison with what happened in the sixteenth century remains doubtful: it was only in the seventeenth that the joint stock company developed.¹⁶⁸ The natural way for a large enterprise to be structured in the Roman world would be through the employment of freedmen and slaves in responsible positions, and through *institores*. Admittedly we have little evidence for specific large enterprises of this kind. In the second-century wreck 'Saint-Gervais 3' several different Antonii lost amphorae, and they were probably fellow freedmen.¹⁶⁹ If so, they may or may not have been working in the interests of their *patronus*.¹⁷⁰ There were other forms of co-operation: a common one was that several independent merchants shipped goods on the same vessel.¹⁷¹ We should not in any case be hasty to assume that the Romans lacked the commercial structures which they needed.

It might be expected that merchants, like many tradesmen and craftsmen, would have formed guilds (*collegia*) in great numbers, but such was not the case. A few are attested, such as the *collegium* of the *vinarii importantes et negotiantes* [[importers and traders of wine]] at Ostia, and shippers (*navicularii, nautae*) organized themselves into *collegia* in a number of places.¹⁷² But the *negotiatores/emporoi* so often had diverse economic interests, and in so many cases travelled long distances, that they did not naturally coalesce. Many of the more successful ones became *Augustales* in the various cities, and presumably by this means satisfied their instinct for collegiality.

¹⁶⁶ Philostratus, *V.Ap.* v.20, Rougé (1966: 287–91).

¹⁶⁷ Cf. *ibid.* 423–35; Rougé (1980: 296–8). The most fruitful source is *Dig.* xvii.2 (though many of the partnerships concerned had nothing to do with trade). The evidence from the eastern provinces has never been collected.

¹⁶⁸ On the growing size and complexity of Italian companies in the fifteenth century, see Ball (1977: 24–5), and on the development of the joint stock company in northern Europe after 1550 see e.g. *ibid.* 40–44.

¹⁶⁹ Liou (1980: 174).

¹⁷⁰ Cf. D'Arms (1981: 143).

¹⁷¹ See e.g. Paulus in *Dig.* xiv.2.2.2.

¹⁷² On the *corpora naviculariorum* and the grain trade, see Rickman (1980: 87–92, 226–30).

A type of organization which was quite common, and has interesting parallels in the history of early modern commerce, is the 'colony' in a distant city. At Ostia there were offices representing Narbo, Carales, Turris (both in Sardinia), Alexandria, and each of a number of towns in Africa Proconsularis.¹⁷³ At Puteoli the Tyrians, and probably others, were organized.¹⁷⁴ In many other cities of both east and west, similar groups were to be found. Often the strangers were from far away, for example Alexandrians at Tomi and at Perinthus (on the Sea of Marmara). No one has systematically investigated the character and functions of such 'colonies'.¹⁷⁵ Perhaps the most remarkable merchants' organization was, however, a formally constituted guild, the *Corpus negotiatorum cisalpinorum et transalpinorum*, the Cisalpine and Transalpine Merchants' Organization, which is attested in several cities in Italy and to the north.¹⁷⁶

COMMERCIAL FINANCE

No one could doubt that the Roman financial system was drastically different from anything modern,¹⁷⁷ but many key questions about it are hard to answer. How did you obtain credit to carry on a commercial enterprise? How easy was it to do so, in practice? Were the financial institutions of the Roman Empire flexible enough for the purposes of long-distance trade? We shall not waste time asking whether the money supply was so limited that it inhibited the development of trade:¹⁷⁸ for we have only the most hypothetical idea how much money, in the sense of cash and callable deposits, existed at any date.¹⁷⁹ There is in any case no evidence of frequent liquidity crises or of astronomic interest rates.¹⁸⁰

¹⁷³ *CIL* XIV.4549.

¹⁷⁴ Tyrians: *OGIS* 595.

¹⁷⁵ For such groups at Rome itself, see Loane (1938: 55–9), Moretti (1958). See also e.g. *CIL* III.10548 for Cologne merchants at Aquincum. Tomi: *IGRR* I.604 (AD 160). Perinthus: *CIG* 2024. Concerning other places in the Greek world see Stöckle (1924: 160–61). The continental *negotiatores Britannici* studied by Hassall 1978 seem to be a different phenomenon, merchants who traded with Britain.

¹⁷⁶ *CIL* V.5911 (Mediolanum), XIII.2029 (Lugdunum), 11480 with *AE* 1952 no. 205 and 1972 no. 352 (Aventicum), XIII.5305 and 11547 with Kolb and Ott (1988) (Augusta Rauricorum). Cf. Schlippschuh (1974: 112–13).

¹⁷⁷ For the western Empire see Andreau (1987a) (but he deals only with specialized professionals); on banks in the Greek world see Bogaert (1968).

¹⁷⁸ This seems to be the notion of Pékáry (1980). He does not make the appropriate comparisons, which are with early modern states (as Carrié notes, 1980: 116).

¹⁷⁹ Cf. Veyne (1976: 534 n. 467). Goldsmith's attempt to estimate the amount of coin in circulation (1987: 40–42) is too speculative to be useful. Late-medieval banks are said to have aimed at keeping cash reserves of about 30 per cent of deposits, and it has been suggested that ancient practice was similar (Bogaert 1968: 364, drawing on De Roover 1948: 306, 318, for late medieval practice). [[On this topic see Chapter 10.]]

¹⁸⁰ Naturally the availability and cost of loans varied from place to place: cf. *Dig.* xiii.4.3 (Gaius). See further Andreau (2000).

It is assumed in the upper class that if one becomes active in commerce, one will borrow.¹⁸¹ Large sums can be borrowed either from private individuals or from banks.¹⁸² The bankers we know about are generally to be found in ports, which suggests the profession's commercial orientation.¹⁸³ Yet bankers seem not, at least as a general rule, to have made maritime loans, presumably because of the high risks.¹⁸⁴ Special rules applied to *traiecticia pecunia*, the maritime loan: it functioned in such a way as to include marine insurance, and alone of Roman loans it had its interest rate settled solely by the market, without any legal ceiling.¹⁸⁵ This gave needed flexibility. In fact the overall impression which the sources, including the papyri and the Murécine tablets, give us is that credit was rather readily available, and that in normal circumstances trade is unlikely to have been hampered by credit shortages.

What the financial system seems to have lacked is the power to accommodate entrepreneurs over long distances. Not that it was helpless in this respect: you might, for instance, be able to repay in Rome a debt which had been incurred at Berytus, or collect at Puteoli a sum lent in Egypt.¹⁸⁶ A detailed study has concluded that in the western Empire banks were purely local in scope,¹⁸⁷ and there is no real sign of Empire-wide financial networks—with the not unimportant exception of the imperial household. It might, however, be possible to detect some relatively sophisticated financial arrangements concerning trade between the cities of the eastern Mediterranean.

Another fundamental question concerns the extent to which the economy was monetized (see also [[Andreau 2000]]). The existence of a certain amount of barter should certainly not lead us to categorize the Roman system as a primitive one.¹⁸⁸ Even when Strabo was writing, regions which lacked money were strange and marginal in the eyes of a well-travelled Greek.¹⁸⁹ And in fact a fair quantity of evidence points to the monetization of the country-town market as well as of the larger cities.¹⁹⁰ |

¹⁸¹ Seneca, *Ep.* 119.1 (in the first place, interestingly, from *proxenetae*, brokers).

¹⁸² For the relationships of financiers and merchants see D'Arms (1981: 102–8). Lending by bankers for commercial purposes: Andreau (1987a: 585–7, 656–7).

¹⁸³ Cf. *ibid.* 607.

¹⁸⁴ *Ibid.* 603–4, Bogaert (1968: 355). However, a banker might be involved as at least an intermediary, as was the case with the particular maritime loan we know most about (the banker was a Roman citizen based in Thadelphia): see the revised text of *P.Vindob.Gr.* G 19792 in Biscardi (1974: 211–14) and in Casson (1986b) (= *SB* xiv.11850) (AD 149).

¹⁸⁵ This is the implication of Paulus, *Sent.* ii.14.3, which is admittedly later than our period; cf. Billeter (1898: 242–4), De Ste. Croix (1974: 55). The notion of Rougé (1980: 291–5) that maritime loans were only used by small traders is unfounded.

¹⁸⁶ Payment at Rome (but not at Brundisium): *Dig.* xlv.1.122.1; Rathbone (1983: 89).

¹⁸⁷ Andreau (1987a: 663, 668–70) (referring to the west).

¹⁸⁸ Nor does it matter very much whether every corner of the Empire was part of the monetary economy: compare Carrié (1980: 115), on the economy of the Abruzzi about 1930. [[For heavy use of coins in the provincial countryside see e.g. B. Ward-Perkins (2005: 112).]]

¹⁸⁹ Strabo iii.155 (the deep interior of Lusitania), vii.315 (Dalmatia and the barbarians). Cf. Duncan-Jones (1990: 34). Dalmatia at least will have been different later.

¹⁹⁰ Veyne (1979b: 266 n. 22) and (concerning Belgium) Wightman (1985: 156).

GOVERNMENTAL INTERVENTION AND ITS LIMITS

The imperial government drew revenue from tariffs on trade, and so did a certain number of cities in the east, especially in Asia Minor and Syria.¹⁹¹ Apart from these *portoria*, the only tax levied on commerce was, as already noted, the 4 per cent tax on the sale of slaves. The *portoria* were exacted at many customs points within the Empire, most of them situated in ports (often river ports) or other places which were on or near to external or inter-provincial frontiers.¹⁹² Rather curiously, the sea-ports of Italy seem to have been exempt while the land frontiers were not.¹⁹³ The tariff was a *quadragesima*, 2.5 per cent, in the Gallic district (which eventually seems to have included the German provinces) and in the provinces of Asia and Bithynia, also in Spain.¹⁹⁴ The absence of evidence for a *quadragesima* tax in other places, combined with the varying rates given in the Zarai Tariff (AD 202), suggests that, contrary to what is often said, many areas of the Empire had no flat rate. A tariff of 25 per cent seems to have been exacted at the eastern frontiers of the Empire,¹⁹⁵ but what happened on other external frontiers is unknown. It is difficult to say with confidence whether the distribution of this tax burden corresponded to any policy objectives.¹⁹⁶

Whether one thinks the government's intervention in long-distance trade was heavy or light depends in part on one's own historical perspective. The prevailing system was certainly not pure *laissez-faire*. Quite apart from the problem of supplying the army, the imperial power concerned itself with the wheat supply and later also with olive oil, and some city governments did so too.¹⁹⁷ Emperors and cities were also involved in their capacity as property owners, especially through imperial ownership of mines and quarries. Not of course that it was quite proper for an emperor to be too interested in commercial revenues, and Vespasian's reputation suffered on this score.¹⁹⁸

¹⁹¹ On the whole subject see esp. De Laet (1949) (on the *portoria* which cities were allowed to exact: pp. 351–61).

¹⁹² For the regulations from Ephesus, see Engelmann and Knibbe (1989). [[See the analysis by Merola (2001: 209–19) and the new edition by Cottier et al. (2008).]]

¹⁹³ No source says that the Italian *portorium* had been abolished, but the total silence of the epigraphical sources is sufficient evidence. Aquileia and some other places in north-eastern Italy are usually thought to have been included for *portorium* purposes in Illyricum (cf. De Laet 1949: 178–80; Panciera 1957: 61–73), but the evidence is not conclusive.

¹⁹⁴ Gaul: De Laet (1949: 125–73). Asia: *ibid.* 274–5 (mistaken, however, in supposing that we have any evidence that this rate was extended to Asia Minor in general). Bithynia: *ILS* 9490 (Severan). Spain: *CIL* II.5064 = *ILS* 1462 (*CIL* XIV.4708 is probably Severan: Etienne 1951).

¹⁹⁵ At or near Palmyra: *AE* 1947 nos. 179 and 180. In Egypt: see the allusions in the papyrus published by Harrauer and Sijpesteijn (1985) (cf. Casson 1986a). The relevance of *Periplus Maris Erythraei* 19 is very dubious: Bowersock (1983: 70–71).

¹⁹⁶ On the low rate for slaves at Zarai see above, p. 74.

¹⁹⁷ On official *sitonai* and *elaionai* (grain- and oil-buyers) in the cities see respectively Pavis d'Escurac (1987), Robert (1969).

¹⁹⁸ Suetonius, *Vesp.* 16.1.

At Rome and in the cities, officials, chiefly aediles and *agoranomoi*, supervised the markets [[...]]. This was a matter of regulating trade in the interests of the community. Trade was also encouraged: governments and philanthropists frequently provided items of infrastructure such as harbours, porticoes, warehouses, *macella* (food-markets), and other places for doing business.¹⁹⁹ And this interest was matched by quasi-official rhetoric: emperors wanted long-distance trade to flourish.²⁰⁰

This concern also affected the legal system. As has already been hinted, the Roman legal system took extensive cognizance of the problems and disputes which arose in commercial life, and the solutions which it provided were balanced and increasingly sophisticated ones.²⁰¹

THE CHARACTER AND SCALE OF ROMAN TRADE: SOME CONCLUSIONS

It no longer seems reasonable to assimilate Roman trade either, on the one hand, to the trade of an early industrial or a modern economy or, on the other hand, to the exchange system of a 'primitive' culture. The exposition offered in this chapter leads to the conclusion that Roman trade concerned far more than 'luxuries' or one or two government-dominated 'staples'. Because the Roman Empire contained a few cities which were very large by the standards of before 1800, and many other secondary cities, it had large markets for foodstuffs, textiles, metals, and many other commodities. The social and institutional mechanisms which were needed to sustain such trade existed. So, to a sufficient degree, did an entrepreneurial or at least trade-oriented mentality. All of these phenomena—cities, markets, institutions, mentalities—had their specifically Roman forms, just as we should expect.

Nothing said in this chapter, however, should be construed as a return to a Rostovtzeff-like view of an entire Roman economy dominated by commerce. It remains true that reasons of technology and of social structure prevented the Romans from replacing their agrarian economy, in which the mass of the population lived not much above subsistence level, with a more dynamic system. Transport technology and production technology were relatively slight. Slave labour always made up a large proportion of the work force in

¹⁹⁹ Governmental interest in infrastructure: Rougé (1966: 465–6) and for Egypt, Arabia and Judaea, Sidebotham (1986: 48–77). On port installations see e.g. Meiggs (1973: esp. 64–78), D'Arms (1974), Greene (1986: 29–30) [Houston (1988), Sidebotham (2008)]. On *macella* see esp. De Ruyt (1983): they were built by philanthropists (pp. 352–3), supervised and renovated by cities (pp. 354–5, 358–60).

²⁰⁰ Pliny, *Pan.* 29, Aelius Aristides, *To Rome*, 11–13.

²⁰¹ Well argued with respect to the wine trade by Frier (1983).

any sizeable economic enterprise, whether it was an estate or a workshop (this, however, had the advantage of assisting the formation of capital). The weakness of the commercial bourgeoisie must also have had | important effects, although they are hard to define: one consequence is that we never hear, as we often do in early modern states, of merchants or others advocating public policies on the basis of commercial utility.

CHANGES OVER 120 YEARS

During the fourteenth and fifteenth centuries, so it is now believed, long-distance trade in western Europe went through several periods of expansion and contraction.²⁰² We have no means whatsoever of knowing whether such cycles also occurred between AD 68 and 192; a priori it seems likely.

One indubitable long-term change is that government intervention increased. The trend is clearly visible under Antoninus Pius with respect to olive oil, and there are indications under Marcus Aurelius and Commodus, preceding a markedly higher degree of state control under the Severans [[see further below, p. 214]]. What started all this is unclear—it is not enough to say that the government became more concerned about the supply of certain commodities. Part of the explanation is the steady and inevitable concentration of assets, including landed estates, in the hands of the emperor.

Late in our period, the trade of the Roman Empire probably began to contract. It is possible that the modest decline in the number of identified Mediterranean shipwrecks from the first century to the second resulted from a real decline in trade.²⁰³ If there was substantial contraction of trade, it may well have begun with the plague of 165–189,²⁰⁴ the resulting population decline, and also with the warfare of Marcus Aurelius' reign. The Roman economy was still to go through many further fluctuations, but the high point of long-distance trade was now past.

[[*Addendum*]]

On the effectiveness of transport by sea in Roman antiquity see in detail Harris and Iara forthcoming, where technical improvements in ship-building are fully evaluated. Most of the products discussed above have been the subjects of further investigations, and a full bibliography would be out of place. Erdkamp (2005) is important on the

²⁰² Lopez (1987: 379–80).

²⁰³ For the fact see Parker (1984: 110, fig. 4).

²⁰⁴ However, there may already have been serious difficulties in the economy of the capital under Antoninus Pius, causing a decline in construction (for which see Steinby 1978: col. 1515).

grain trade, though excessively focused on the city of Rome. The study of Roman glass has progressed particularly fast since this chapter was written (see especially Nenna 2007), partly because of the discovery of a specialized cargo, Embiez West 1, that included both worked and unworked glass (Fontaine and Foy 2007), but it was something of a special case because the raw material occurred in very few places. On the guilds of the *centonarii* see Liu (2009). What I wrote here about timber will be modified in a forthcoming article which will show that while most places (though not *urbs Roma* or Egypt) relied for fuel-wood on local supplies or short-distance *cabotage*, wood for making things (*materia*) was regularly traded over longer distances. The ‘Muziris’ papyrus, referred to above (p. 174 n. 127) has been analysed by Rathbone (2001), and a forthcoming study by Dario Nappo will tell us more about which commodities were involved and on what scale. Government intervention in commerce is the subject of Chapter 9. On periodic markets see Lo Cascio (2000).

On the much contested question of the integration of markets, wrongly neglected in this piece, see below, pp. 297–300. For the non-integration of markets in fifteenth and sixteenth-century Europe see M. C. Howell 2010, 8–9.]]

Trade and the River Po

A Problem in the Economic History of the Roman Empire

(1989)

This paper may be thought to illustrate the optimistic, not to say quixotic, attitude of those who write about the economic history of the classical world. The fact which it seeks to establish and to explain—the apparently rather limited development of the Po as a commercial artery in the Roman period—pre-eminently needs *quantifying*. No such quantification is even remotely possible, and even rough comparisons with what happened in the Etruscan and medieval periods are very hazardous. Something, however, seems to be visible through the Padane mist, and we should do our best to describe what it is.¹

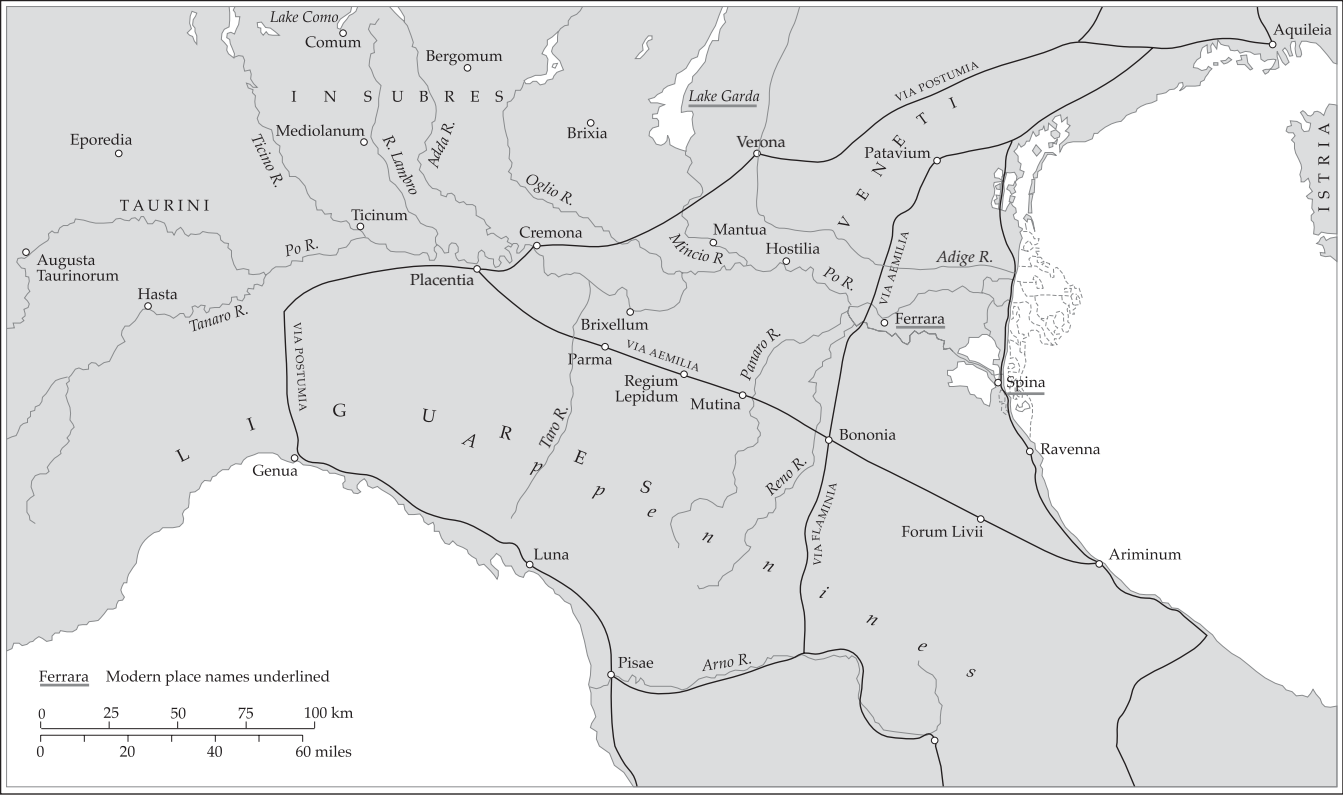
‘The Romans there’ (in Cisalpine Gaul), Strabo says (v.218), ‘have surpassed the rest of Italy in population, in the size of their cities and in wealth.’ He proceeds to give some details of agricultural production, to which we shall return shortly. In what sense, then, could we speak of ‘failed development’ in this region, a phrase which may seem in any case to carry with it anachronistic implications about what constitutes ‘development’?² The answer is that what failed to develop was specifically trade along the Po, not the whole economy of the region. And the failure was only relative—to other rivers, and to what might possibly have happened.

Historians generally agree that water transport was much less expensive in antiquity than land transport; the evidence includes papyrus texts and the Edict of Diocletian.³ Conventional Roman wisdom held that an estate ought if

¹ Thanks are due to the National Endowment for the Humanities for a research fellowship that helped me to do some of the work on the ancient history of northern Italy on which this paper is based. [[For the geographical features mentioned in this chapter see Map 8.1]]

² In an earlier version of this paper, I gave it the subtitle ‘A case of failed development’. On such terminology see Thompson (1982).

³ Cf. for example Hopkins (1983b: 102–5).



Map 8.1 Northern Italy under the Roman Empire

possible to be near some useful transport route such as a navigable river.⁴ And some navigable rivers in the Roman Empire were heavily used for commercial transport, including the Nile, the Rhône, and the Guadalquivir. The River Po was apparently considered by the Romans to be navigable as far up as the confluence with the Tanaro (cf. Polyb. ii.16.10) or, later, even as far as Turin (Plin. *NH* iii.123),⁵ and some of its tributaries were also navigable (including on the Alpine side the Ticino, Lambro, Adda, Oglio, and Mincio, and on the Appennine side perhaps at certain times the Panaro and the Reno).⁶ The river should have been an important transport route, and its great importance for the communications of Cisalpine Gaul is sometimes proclaimed.⁷

Until the decline of the port of Spina in the fourth century BC, the lower part of the river must in fact have carried a considerable amount of freight. But in the Roman period the Po never became as important a commercial highway as we might have expected. There is some evidence, both literary and epigraphical and archaeological, for commercial traffic, but it is surprisingly thin under the principate.

Strabo, in the passage already quoted, mentions the following Cisalpine products: (1) pigs, which 'Rome mainly feeds on', a remark which looks as if it is drawn from Polybius ii.15.3; (2) millet (cf. Polybius ii.15.2); (3) pitch; (4) wine; and (5) wool, of which there are three grades. The soft kind of wool is produced by 'the places around Mutina and the River Scultenna' (Panaro), the rough kind by Liguria and by the country of the 'Sumbroi' (who are generally agreed to be the Insubres), 'from which' (the land of the Insubres is the antecedent) 'the greater part of the households of the Italians are clothed', and the medium kind by the region around Patavium. Thus the export of pigs and wool beyond the region is explicitly mentioned, and there is the obvious possibility that salted pork and the Mutina/Scultenna wool and the Insubrian wool were shipped down the Po (it is also possible that sheep were sometimes herded long distances to the places where they were sheared). The district which, formerly at least, had been best known for its pork was also that of the Insubrians.⁸ But unfortunately it is plain, in view of the

⁴ Cato, *De agric.* i.3 (there should be a strong town near, or the sea, or a river 'qua naves ambulant', or a good and much-travelled road), Varro, *RR* i.16.6 (good roads or navigable rivers), Columella i.2.3 (the sea or a navigable river).

⁵ Polybius and Pliny may of course have been thinking of different kinds of vessel. In any case it does not seem likely (in spite of Walbank's note on this passage of Polybius (1957-79: 1.179)) that Pliny was relying on a source earlier than Polybius. It would be reasonable to suppose that Roman engineering works had extended the navigable portion of the river, though there is no direct evidence for such works anywhere between the Tanaro and Turin. In practice navigability may have varied considerably from season to season and from year to year. For some of the tributaries this is even more true: the flow of the Panaro, for instance, is recorded in modern times as varying at Bomporto from zero to 646 m³ per second (Pellegrini 1969: 10-11).

⁶ Pliny, *NH* iii. 118 ('Appenninos') held that there was more than one navigable tributary on the Appennine side.

⁷ Chilver (1941: 28), Mansuelli (1962: 156-7).

⁸ Cato, *Orig.* fr. 39 = Varro, *RR* ii.4.11 (but the text is highly corrupt). He seems to say that they produce 3,000 or 4,000 *succidiae* (joints) of this meat every year.

other sources of supply which he himself | and others mention, that Strabo was seriously exaggerating the importance of the Cisalpina as a source of pork and wool for Rome and central Italy.⁹ In fact both pigs and sheep were widely reared in Italy and elsewhere.

Another piece of literary evidence for the River Po's role in long-distance trade might seem to be the elder Pliny's statement that it carries 'marina cuncta', all sorts of things that come from the sea, up to the Eleventh Region (the north-western part of Cisalpine Gaul).¹⁰ He of course knew the region at first hand. But this remark is not especially informative for present purposes. He is not speaking of an intense two-way traffic in numerous commodities, but is rather emphasizing that although the Eleventh Region (alone of all the regions) is landlocked, it obtains things which come out of the sea—for 'marina' means that, in other words mainly fish and salt, not things which come *across* the sea.¹¹ If you wanted to eat salt-water fish in Ticinum or Mediolanum, they would have come up the Po (usually having been salted first, one might think). Pliny's remark is not devoid of interest, but it does not establish that there was a large-scale trade. Admittedly any argument from silence has to be treated with reserve in this context, since the kinds of sources we possess are seldom interested in such phenomena as a hypothetical trade along the river in, say, wool or timber.

Vitruvius took a strong interest in the production of larch timber in the Po valley, particularly because the wood is fire-resistant; he says that it grew 'circa ripam fluminis Padi' (ii.9.14), which is probably meant in a broad sense,¹² and that it was carried down the Po to Ravenna (9.16), either on ships or on pinewood rafts. Since other areas also produced larch wood and since Vitruvius complains that from north Adriatic ports there was no 'facultas adportationibus ad urbem' (ibid.), means of transporting it to Rome (presumably just because the costs were too high), it is perhaps unlikely that this trade was of more than regional significance.¹³

⁹ Tchernia (1983: 97).

¹⁰ Pliny, *NH* iii.123: 'Transpadana appellatur ab eo regio undecima, tota in mediterraneo, cui marina cuncta fructuoso alveo importat' (Mayhoff restored *marina* for the manuscripts' *maria*): 'the eleventh region is called Transpadana after the river; it is all land-locked, but the river brings it all the products of the sea along its useful channel.'

¹¹ This is clear from *TLL* s.v. *marinus*. As S. Panciera has pointed out to me, Strabo v. 214 makes a similar remark about Aquileia: the 'Illyrians' obtain from the market there τὰ ἐκ θαλάττης as well as wine and olive oil; this too could refer to products of the sea.

¹² Since the Romans are said to have discovered the larch at some (unidentified) *castellum* near the Alps (ii.9.15–16).

¹³ Uggeri (1975: 127) argues for the existence of a timber trade on the basis of two place names from near Ferrara, Maiero, and Marrara, both, he says, deriving from Lat. *materia* (building timber). The name 'Carbonaria' for one of the mouths of the Po (Pliny, *NH* iii.121) presumably derives from the burning for charcoal of timber brought down the river (cf. Uggeri p. 129). For some comments on Vitruvius' information about the exploitation of larch-wood cf. Meiggs (1980: 191–2; 1982: 248–9).

That there was well-organized passenger travel, at least at one time, is indicated by Strabo's remark (v. 217) that the journey by boat from Placentia to Ravenna takes two days and two nights; it is particularly interesting that one could travel by night. This is not, however, a credible speed for freight traffic.¹⁴

Such is the explicit literary evidence from the principate, and it leaves something to be desired. In this state of affairs the relative shortage of epigraphical allusions to trade along the Po, by comparison for example with that which exists concerning the Rhône, is quite striking.

An inscription of indeterminate imperial date from Mantua mentions a guild of sailors, but they may have operated mainly on the lake which is a prominent feature of Mantua's topography, just as most of the other known civilian sailors of northern Italy were lake sailors (mainly from Lakes Garda and Como).¹⁵ Another inscription, first properly published in 1977, apparently shows that at some imperial date there was a guild of sailors or boatmen at Ticinum (Pavia), but what is surprising is that there is not more evidence of the same kind, above all concerning boatmen on the Po itself.¹⁶

Not that the epigraphical evidence is restricted to inscriptions specifically about boatmen. Evidence about other *collegia* can also be helpful. At Brixellum, on the Po well above its confluence with the Oglio, we know that there once existed a guild of *lanari carminatores*, wool carders.¹⁷ But it is very doubtful whether the Po was vital to Cisalpine wool production, for there are many other Cisalpine inscriptions about woolworkers, in addition to some literary evidence, | and while some of the cities in question—Parma,¹⁸ for instance, in addition to those already mentioned—could make use of Po navigation, others could not.¹⁹ Nor has trade along the Po in any of the other major commodities of the region left any clear epigraphical trace.

In the future, archaeological evidence may tell us a great deal more about Roman trade along this river than it does at present.²⁰ The amphora evidence in

¹⁴ In v. 212 he comments in general terms on the accessibility of the inland Cisalpine cities by river, especially by the Po itself; but the mouth of the river is so silted up, he says, that it is difficult though not impossible to enter. Presumably this was before the Augustan work on the *fossa* to Ravenna. For boatmen on the Po see also Pliny, *NH* xvi. 178 (they use masts made of reeds).

¹⁵ Pais, *Supplementa Italica* no. 669, with the comments of Boffo (1977: 626). Tozzi (1972: 67) holds that they probably operated along the Mincio. For the other boatmen of northern Italy see Boffo, pp. 625–6. However, as she remarks, those of Peschiera may have been active on the Mincio, which runs out of Lake Garda at Peschiera to join the Po, as well as on the lake itself.

¹⁶ *Ibid.* 623–32 [= *AE* 1977 no. 327]]. She conjectures (pp. 626–7) that there were *collegia* of boatmen at Placentia, Cremona, Brixellum, and Hostilia, but what is interesting is the lack of any respectable evidence for this.

¹⁷ *CIL* XI.1031.

¹⁸ Columella vii.2.3.

¹⁹ For accounts of Cisalpine wool production see Chilver (1941: 163–7), Noé (1974). Cf. Chevallier (1983: 256–9) and for background Frayn (1984).

²⁰ It is also to be hoped that medieval archaeologists will be able to provide more information about the later growth of trade along the Po; how little of this archaeology is known at present is candidly indicated by Mannoni (1983: 221) (cf. also B. Ward-Perkins 1983).

particular obviously offers interesting possibilities, but although it has recently been observed that amphorae of a certain type (Dressel 7/11) which *may* come from Spain are 'abbastanza diffuse' in the cities of the Po plain (Como, Cremona, Milan, and Verona are specified),²¹ such statements are still, I think, some way from acquiring the precision and certitude which one would like. We can hardly say more at present than that in the late Republic and the high Empire a certain number of amphorae from outside the plain of the Po ended up at cities such as Cremona and Mediolanum; whether the number is significantly large remains unknown. And to take a widely attested amphora mark, 'THB' amphorae are known from many different places in Cisalpine Gaul, but their known distribution does very little if anything to prove the importance of water-borne transport.²² In short, the amphora evidence is still very far from unequivocally establishing the importance of trade along the Po.

Another kind of material which requires further study is building stone. Several scholars have pointed out that *rosso di Verona* and trachyte from the Colli Euganei were sometimes employed by the Romans in other parts of Cisalpina, for instance at Bononia and Mutina.²³ That some of this stone was transported by water, and in part along the Po, is a clear possibility. The volume, chronology, and geographical patterns of such trade (intra-regional of course) deserve detailed and careful evaluation.

Still in the realm of material evidence, it has been observed that the figurative art of the Po region, again by contrast with what happened in the vicinity of some of the other great rivers of antiquity, showed no significant interest in inland shipping.²⁴

With regard to the location of settlements in the Po valley, one can at least say that the pattern is consistent with this hypothesis of rather limited trade development. There is no perennial full-status Roman town on the Po below Cremona, and even Placentia and Cremona were to some extent artificial creations; Cremona failed to recover entirely from the severe destruction which took place in 69,²⁵ possibly because it was not sustained by heavy trade along the Po. Lower down, there was no important city by the river until the rise of Ferrara in the eighth century. Brixellum was apparently made into a colony in the triumviral period,²⁶ but although it does have a handful of

²¹ Guarnieri (1982: 73). But the more detailed studies of Baldacci (1967–68, 1972), etc., and Buchi (1973) do not go so far.

²² I choose this example because the known instances were carefully listed by Tchernia (1967: 232). In northern Italy, the places concerned are Mutina, Vercellae, Verona, Opitergium, Bergomum, Aquileia, Concordia, Brixellum, Ateste, Dertona, Mantua, Regium Lepidum, and Altinum.

²³ Cf. Mansuelli (1973), Frova (1973: 110), Uggeri (1985: 52).

²⁴ Alfieri (1968: 203).

²⁵ See Tozzi (1972: 43–5).

²⁶ Pliny, *NH* iii.115 is the direct evidence for colonial status. On the basis of *AE* 1933 no. 154, Susini (1971) has persuasively argued that the colony had the title 'Concordia', which would probably mean that it was founded under the triumvirs.

inscriptions concerning prosperous freedmen, who may have been interested in river traffic, its epigraphical remains (25 inscriptions in *CIL*) are not at all extensive by Cisalpine standards.²⁷ Hostilia, below the confluence with the Mincio, was never a separate community and has left extremely few inscriptions.²⁸ On the other hand such flourishing cities as Verona, Brixia, and Bergomum clearly did not owe much of their success to river transport.

It is true that Augustus must have spent heavily in order to build or improve the canal from the southernmost channel of the Po down to Ravenna,²⁹ a distance of more than 25 km.³⁰ This project clearly gave the city good access to all the lower and middle reaches of the river, with the principal aim no doubt of helping the new naval base to obtain the necessary supplies of timber and other commodities. The canal may also have given Ravenna the opportunity of becoming a really important commercial port. But the result was curious: in marked contrast to the evidence from Ostia and some other ports, the epigraphy of Ravenna scarcely hints at trade to distant places.³¹ One may surmise that most of the water-borne trade in the vicinity went to supply the naval forces.³² And the very absence of an important Roman commercial town at or near the mouth of the river is practically enough to demonstrate how limited other business was.

In short, there is reason to suppose that, in spite of the prosperity of some of the region and in spite of the presence of a population which certainly had some notion of a world outside Cisalpine Gaul, the Po did not develop into a much-used trade-route under the principate. This paradox has been noted before³³ but not explained.

²⁷ For references to Brixellum inscriptions published since *CIL*, see Susini (1971: 119 n. 2). Brescello has sometimes suffered very severely in floods (cf. Cracco Ruggini 1961: 481–2 on the year 589), which may have distorted the record.

²⁸ Verona and its territory have 681 texts in *CIL*. The Hostilia contribution (V.3245, 3721, 3758) is insignificant. Hence it is difficult to agree with Bosio (1967: 68) that the Augustan canal between the Po and Ravenna made Hostilia into 'un importantissimo scalo fluviale ed un centro logistico di primo ordine'.

²⁹ Plin. *NH* iii.119: 'Augusta fossa Ravennam trahitur... proximum inde ostium magnitudinem portus habet qui Vatrene dicitur', '[the Po] extends down to Ravenna in the Augustan canal... the mouth nearest Ravenna, which is called Vatrene's, has the size of a harbour'. According to Iordanes, *Get.* 29 (= Dio lv.33.3), the canal was 'latissima', 'very wide'. The *fossa Flavia* which Pliny mentions (*NH* iii.120) was evidently concerned with north-south transport across the delta (cf. Uggeri 1975: 69–70).

³⁰ On the delta system of this time (often misrepresented in modern maps: thus two out of the three overall maps of the region given by Chevallier 1980 are misleading), see Uggeri (1975: esp. 49–50, and 1984: fig. 8), Chevallier 84–94. [[See also *Barrington Atlas*, Map 40.]]

³¹ Even the possibility that *CIL* XI.135 and 138 refer to *nautae*, maintained by Boffo (1977: 626), is very dubious.

³² Cf. Uggeri (1975: 127).

³³ Nissen (1883–1902: 1.208) (emphasizing the sheer physical problems), Alfieri (1964: 1. 69); cf. Chilver (1941: 31).

In the fourth and fifth centuries, it should be noted, there are some indications that the river was used for long-distance trade as well as for carrying passengers. The sources are unsatisfactory for various reasons, but we should notice that Ambrose, albeit in a vague and rhetorical passage (*Hexaem.* ii.3), refers to imports brought up the Po; and that Sidonius, describing the journey he made | down the river in 467, remarks that the branch of the Po which enters Ravenna brings trade—‘here everything suitable for trade, but above all foodstuffs, was being brought down’.³⁴ Ravenna had of course by this time entered a completely new phase of its history, but the implications of its fifth-century development for the economy of the region cannot be fully discussed here. As far as the Po is concerned, the real commercial expansion seems to have begun much later, in the eighth century (the Lombards and Byzantium having made peace in 680). Both international relationships and the structure of the Cisalpine economy had by this time undergone drastic changes.³⁵

The most obvious explanation for the limited development of the Po during the classical period is a physical one—that is to say, the difficulty of making use of a river which has a very variable flow, and which furthermore passes for much of its course through an extremely level plain, with the double effect that a navigable channel within the river was always liable to be silted up at short notice and the surrounding territory was in many places marshy and liable to very destructive flooding.³⁶ It is said in fact that before modern deforestation took place the flow of the river was more stable.³⁷ But in any case an enormous effort would have been necessary to make it reliably usable in Roman conditions.

How much was achieved it is difficult to tell. The first specifically attested | project is that of Aemilius Scaurus in the territory of Parma in 115 or 109 BC, though it is probable that the colonization along the Via Aemilia in the early part of the century had already led to a good deal of land reclamation. In any case, Scaurus drained land on the right bank of the river ‘by running navigable canals from the River Po to Parma’.³⁸ Since Strabo specifies that they were

³⁴ Sidonius Apollinaris, *Epist.* i.5.5–6: ‘hic cum peropportuna cuncta mercatui, tum praecipue quod esui competeret, deferebatur’. Concerning trade at Ravenna cf. also Servius, *Georg.* i. 262. For other references to passengers on the river in this period see Cracco Ruggini (1961: 282–3). The passage in Ambrose’s letters (xxxix.3) in which he describes the ruinous state of the Cispadane cities c.390 is also very artificial (cf. Cracco Ruggini p. 61 n. 145), but no doubt gives a useful general indication of their condition at the time.

³⁵ Violante (1953: 3–40), Cracco Ruggini (1961: 462–6), Duby (1974), Boffo (1977: 629), Wickham (1981: 89–91).

³⁶ The most informative of all works on the flooding of the Po is perhaps still Lombardini (1870). As evidence of what used to happen to the river over the long term, it is worth considering the many different courses which the river has followed in the Casalmaggiore–Guastalla sector; they are illustrated in Cremaschi and Marchesini (1978: 553, fig. 5). For the probable path of the Po between Brescello and the vicinity of Ferrara in the first century AD (very different from the modern course) see Calzolari (1981), especially the map on p. 41.

³⁷ This was maintained in detail by Lombardini (1870: 96–106).

³⁸ Strabo v.217. A disastrous Po flood followed in 108 BC: Obsequens 40.

navigable and since Parma is about 18 km from the nearest point on the river, these canals must have been rather ambitious works of engineering. An enormous amount of work would have been necessary to make the whole river an easy route and keep it so. Floods naturally continued to be commonplace, and in the *Georgics* the Po is described as the most violent of all rivers.³⁹ However the elder Pliny implies somewhat vaguely that by his time floods were not much impediment to shipping.⁴⁰ Augustan engineers were certainly interested in the navigability of the lower part of the river, as we have already seen. When a few years later Strabo commented on the suitability of the river for inland navigation (v. 212), he saw as the chief obstacle silting-up in the delta—that is to say, he implies that the rest of the channel and some of the tributaries were manageable.⁴¹

It can be argued, furthermore, that navigation conditions on the Po are not at all likely to have improved when the river began to gain importance in the eighth century. Hence it seems essential to look for other factors, besides engineering problems, to explain the modest level of trade along this river in the Roman period.

The great distance which separated the mouth of the Po from Rome itself was obviously, as was said earlier, a serious disadvantage for those who wanted to ship things to what was by far the largest market. This disadvantage can hardly, however, have been an overwhelming one, since Patavium and Istria successfully exported certain commodities to the capital.⁴²

There is another possibility—that we should reconsider the accepted wisdom about the ancients' preference for water transport over land transport. The generalization itself is probably unassailable, but we may wonder whether it applies in all possible circumstances. The plain of the Po was extraordinarily well-supplied with long- and medium-range roads, a fact which was made much clearer by the work which P. L. Tozzi published during the 1970s.⁴³ From Placentia the most famous of all these roads, the Via Aemilia, led down to Ariminum, on the way to Rome. No doubt this road was usually well maintained under the principate, and pack animals may have been readily available. The distance from Placentia to Ariminum was reckoned to be 176 Roman miles by road; down the river and along the coast the same journey

³⁹ 'Eridanus, quo non alius per pingua culta/ in mare purpureum violentior effluit amnis', *Georg.* iv.372–3 ('Eridanus, of all the rivers that flow through rich farms into the purple sea the most violent'). [...]. Cf. Hyginus, *De generibus controversiarum*, p. 124.11–12 Lachmann.

⁴⁰ He says that in flood it was more dangerous to fields than to boats, 'agris quam navigiis torrentior' (*NH* iii.117).

⁴¹ See n. 10.

⁴² Concerning Patavium see Strabo v. 213 and (e.g.) Sartori (1981: 169–71); for Istria: Zevi (1967).

⁴³ Tozzi (1974a; 1974b: 61–70), etc.

was about 90 miles longer, half as far again. From the port of Ariminum, as we happen to know, there was at one time regular shipping of wine to Rome.⁴⁴

But much of the answer, I suggest, lies in the very nature of the cities in the Po valley including those on or near the tributary rivers. These were not, by and large, cities that depended heavily on markets outside the region, at least not in the sense that they lived in large part by exporting commodities. Most of them probably did not even as a regular thing attempt to export large quantities of agricultural products or finished goods. The cities in the region of the Po failed to become exporting centres even in the peaceful period of the high Roman Empire partly because of the constraints on trade development which often operated in the Roman world, including above all the family-centred structure of the economy and the relative indifference of much of the moneyed elite.

None of this should be exaggerated, and the extensive work which has been done in recent years about the long-distance trade of the Roman Empire should enable us to arrive at a balanced view. But to a considerable extent the towns of the Po plain remained what many towns were in antiquity, simultaneously market towns and political-administrative centres; they were indeed linked to the general economy, but were not completely enmeshed in it in the modern fashion. The relative affluence of many of these places from the first century BC into the late second or third centuries AD was not mainly, it may be suggested, a result of trade beyond the region, though that certainly played a part. To a greater extent it is attributable to the more or less direct benefits of imperial exploitation. The natural resources of the region made it rich, but it was helped by (among other things) cheap slave labour, the return home of legionary and praetorian veterans, and the participation of men of local origin in the imperial government. Each of these factors had its own history, but their combined effect was undoubtedly profound. Thus the cities prospered, but not primarily because of trade along the region's great river.

[[*Addendum*

See above, p. 5, for my reservations about the argument presented here. The original was sent to press before I could take account of Uggeri (1987), who also saw, apparently, that there is something anomalous about the evidence for commercial traffic along the Po (314). Cera (1995) sought for harbours in the Po river system, and it is intriguing that though she could record some from Eporedia and perhaps from Mediolanum and Brixia, she had nothing definite to report from Ticinum, Placentia, Cremona, Brixellum, Mantua, or Hostilia.]]

⁴⁴ *CIL* VI.1101 = *ILS* 519 (mid-third century).

Roman Governments and Commerce, 300 BC–AD 300 (2003)

In this paper I shall set out the extent and the limits, as I understand them, of the interest which Roman governments (central and local) demonstrated with respect to commerce. Since a full history of this topic would require a book or at least a very long article, I shall be somewhat telegraphic; and I shall isolate four widely separated dates, in the hope of detecting at least some of the evolution in Roman attitudes and behaviour. These dates will be 300 BC, 50 BC, AD 100, and AD 300. What emerges is a picture rather more complex than even the best overall accounts of the Roman economy would lead us to expect.

There probably exist some scholars who would deny that Roman governments can ever have had an attitude towards, or an interest in, anything. They were not governments in a modern sense at all, so it may be said, since they were not equipped with departments or large staffs or with invasive authority. The work of the censors to some extent resembled that of a modern government, but most of the time Rome was content to do without them. Even emperors can be portrayed—rather absurdly—as presiding over no more than a super-household. But ‘government’, as applied to the Roman world, is not a metaphor, and to deny that the Romans had governments would be mere silliness, or to put it differently a pedantic cul-de-sac. The fact that governments were often short-lived, short-staffed, and short-sighted does not differentiate them from those of many other states.

Nevertheless, several fundamental questions about the nature of Roman government remain wide open, such as | whether, at any of the dates just listed, those who presided over Roman governments saw themselves as responsible to the entire community of citizens (past, present and future?), to their own social class, to their own supporters, or simply to themselves. The sources sometimes imply that officials of Rome’s government could even feel an obligation to protect the provincials. And Diocletian’s Price Edict was addressed to *provinciales nostri*.

This is a particular way of re-stating a venerable dispute about the nature of the state. To put it simply, did the state have any autonomous existence, or was state-power a straightforward expression of the will of a dominant social class?¹ For much of the twentieth century Roman historians seemed, with some exceptions, to embrace the latter, *marxist* point of view—quite a paradox (they were of course led to their view of the Roman state not by politics but by prosopography). The procedure for dealing with this issue which I intend to follow is simply to stay vigilant for moments and situations in which the actions of the state appear *not* to correspond to the interests of the dominant class.

‘Central and local’: there were many governments in the Roman Empire, and we cannot construct an intelligent history of Roman government if we ignore either provincial governors or the governments of cities. The most serious risk, to judge by the existing scholarship, is that we shall mistake measures which affected the city population of Rome itself for measures that were applied to the other, say, 98 per cent of the population as well. But our hardest source problem is not to find out how the governors of provinces and their staffs behaved—such as what they did (or refused to do) by way of assisting the interests of Roman *negotiatores*—though we never know enough about this. It is city governments that are the real mystery, and a very important one. To put it briefly, were they commonly hand-in-glove with commercial interests? (The presumptive answer has to be yes, up to a point—but as we shall see, there are complications).² |

Throughout this paper I shall attempt to take into consideration every branch of government, including the judicial branch. At Rome, as in most complex states, there were borderline cases—institutions and categories of persons that were not part of the government but would need to be included in any full account of how the government worked. Obvious examples are the late-republican *publicani* and some of the guilds (*corpora*) of the later empire. Here these borderline cases will necessarily be treated in a most cursory fashion.

We cannot, in any case, look away from the fact that during the late Republic and the high Empire both the senatorial order at Rome and the curial order in the cities were themselves partly made up of men who themselves had commercial interests, if not directly then because of the activities of their own slaves and freedmen. In the case of the senators at Rome, there is no consensus about the extent of these interests, or about the extent to which senatorial officials used their powers to favour their personal interests (on the one side we have to consider the corruption charges levelled against second-century censors; on the other, the significant absence of a commercial element

¹ Cf. Evans et al. (1985: 350).

² Notably chapter 75 of the Flavian Municipal Law. There is also of course the question how far out into the villages and the countryside the cities’ authority was able to make itself felt. Bagnall (1993: 137) attempts to answer this question for Egypt in the fourth century AD.

in the charges against Verres and Piso). In the cities, the problem seems still murkier, but in the Greek cities the leading men were probably less shy about their business interests than was the elite at Rome.

The underlying purpose of this paper is to contribute to a more credible and useful history of the Roman economy than so far exists. I cannot see who will produce this history. The continuous production of collective works, leading inevitably to the *Cambridge Economic History of the Greek and Roman World* [[2007]], leads me to expect that it will in fact be the work of a single individual and not of a collective or team. For there are simply so many questions we disagree about. There are indeed many obstacles in the path of the ambitious economic historian of Rome. Meanwhile we have to content ourselves with sketches, the best of which, as far as | the high-imperial period is concerned, is perhaps Harry Pleket's; and with essays which offer us models of how part of the system worked, the best-known example of this genre being Keith Hopkins's 'Taxes and Trade'.³

As to 'models', I will simply comment that in my view an adequate model of the Roman economy must allow for both structural change and the possibility of long-term growth and decline in GDP.⁴ It must take account of the rise and fall of a complex network of trade in a wide variety of commodities.⁵ In my opinion, we should also reject the myth that the only money the Romans knew consisted of coins.⁶ Nor should we suppose that the presence of a certain amount of 'redistribution' in the | economy excludes the preponderance of markets. But all these questions, and some other equally fundamental ones, will on this occasion have to be neglected.

The question here is not what Roman governments did that affected commercial life, because that would mean giving an account of three-fourths or perhaps nine-tenths of everything such governments did. After all, the most important thing which the central government of Rome did in the middle and late Republic, as far as economic life was concerned, was simply to conquer the whole Mediterranean world and establish the Roman Empire as one of the two great empires of Eurasia, with the effect of making the Roman economy a huge affair spreading from the Atlantic to India. The most important thing which Roman governments did between Tiberius' reign and that of Philip the Arab was to maintain military superiority along the frontiers. The next most important type of action taken by governments, down to the early principate

³ Pleket (1990), Hopkins (1980; 2002). For a general survey see Harris (1993b) [[Chapter 12]]. Some significant progress in model-building is to be looked for in Manning and Morris (2005).

⁴ See in particular Hitchner's and Saller's contributions to the volume just cited.

⁵ Cf. Harris (2000: 716–29) [[Chapter 7]] (written in 1989–90).

⁶ In Finley's view, 'money was essentially coined money and nothing else' and 'there was no fiduciary money' (1985: 196). The former is generally believed, the latter much less: Lo Cascio (1996: 280). Ancient historians must learn to distinguish between different forms of money and near-money. [[See now Chapter 10.]]

at least, was perhaps the re-assignment of land. Our question instead is what governments did about business life, and more particularly about trade in commodities, *in a more or less intentional fashion* (hence there will be no discussion of the question whether the Roman economy was, in some periods, an instance of growth sustained by strong state institutions—a plausible notion which awaits further research on the reality of economic growth under the high Roman Empire).

The most useful recent treatments of this topic both appeared in the 1994 volume from Saint-Bertrand-de-Comminges and are owed to J. Andreau (third century BC to third century AD) and to J.-M. Carrié (late antiquity).⁷ Andreau arrived at these six main conclusions, if I may summarize:

- (1) The Roman elite was fully conscious that maximizing commerce enriched the community—it was aware of the benefits.
- (2) On the other hand, it took no ‘mesures globales’ to | favour commerce—there was no policy about trade.
- (3) This was because the ‘ancients’ considered economic activity, certainly trade, to be a private zone in which the state ‘could not’ involve itself directly.
- (4) The role of the state in such matters was limited to two kinds of activity, in the first place maintaining order and legality, and in the second place providing each group and individual with those ‘advantages’ that were compatible with law and the needs of the state.
- (5) The state was supposed to ensure the citizens’ food-supply ‘and above all in cereals’. It is evident (see Andreau 1994a: 92–3) that he does not mean quite this, but rather that the central government was supposed to ensure the food-supply of the citizens in Rome itself.
- (6) Apart from that, although the state often intervened in matters commercial, its aims were strictly political or social.

Most of these conclusions will strike the majority of other scholars as convincing. Yet it may be that the third and fourth of them, taken together, give a somewhat exaggerated notion of the indifference of the Roman state to commercial matters other than the supply of grain. The question of motives is, as so often, slippery: it is obviously right in a sense that the ‘ancients’, most Greeks and Romans anyway, thought that carrying on commerce of any kind was the business of private individuals, but is that exactly why the state took only certain specific kinds of actions in order to promote trade? And what were those specific kinds of actions?

There were no ‘mesures globales’, but it may be that when Andreau gives the impression that, in the period in question, Rome’s trading economy was a

⁷ Andreau (1994a: 83–98), Carrié (1994: 175–211).

laissez-faire system with a few modifications,⁸ he is not entirely correct. Furthermore, it will not do to distinguish strictly between economic and social reasons for acting: when, for example, we encounter officials or the Senate performing favours for merchants, it is not enough to suppose that social obligations were being fulfilled, for it would be most unrealistic to think | that such *officium—beneficium* relationships never had an economic aspect to them. As Braudel remarked in another context, ‘it is too easy to call one form of exchange economic and another social. In real life, all types are both economic and social.’⁹

About certain ways in which Roman governments may have encouraged trade, or influenced it, or inhibited it, I have nothing novel to say. There will therefore be almost no discussion here of the supervision of marketplaces, nothing detailed about the reasons for the production of coinage,¹⁰ and very little about the state as a purchaser of commodities, or even about taxation and tariffs.

The specific topics will rather be: legal institutions, the provision of infrastructure, the government’s role in food supply, price regulation, military and diplomatic support for commercial activities, and to some extent, when we reach imperial times, the use and management of the emperor’s fortune.

First of all, then, 300 BC. The executive part of the government of Rome consisted largely of elected officials and their personal dependants. These elected officials were either patricians or members of the recently emerged plebeian elite which had adopted or was in the process of adopting aristocratic values. Besides the government at Rome, there were also of course the governments of *municipia*, some eight or nine in number, and of some sixteen Latin colonies.

How the Roman and local elites regarded commercial activity is obviously a matter of speculation. We should assume that the *nobilitas* shared an aristocratic ideology which allowed them to distinguish themselves sharply from banausic persons such as merchants, but how benevolently or indifferently they | regarded such activities is uncertain.¹¹ We know very little about legal developments which may by this time have begun to help (or hinder) trading activities. It looks, by an accident of the textual evidence, as if the state provided no physical infrastructure except incidentally (the Via Latina, the

⁸ It is commonly said that emperors’ attitude cannot even be characterized as *laissez-faire*, since they simply had no policy in this respect: Pleket (1994: 115).

⁹ Braudel (1982: 227 = 1979: 195); there is some exaggeration, obviously.

¹⁰ Howgego (1990) showed that it is too simple to suppose that the only important motive was to make state payments. He did not find much evidence that Roman governments ever minted coins to facilitate trade (*De rebus bellicis* 1.6 is the most interesting passage)—but is this silence significant?

¹¹ When Ap. Claudius Caecus, the patrician ally of the freedmen, brought about the ‘nationalization’ of the cult of Hercules at the Ara Maxima in the Forum Boarium as censor in 312, was he looking after a cult which had a special meaning for merchants?

Via Appia), but it is reasonably plain, for instance, that long before the end of the fourth century the Forum Boarium in particular had undergone some state intervention.¹² The great era of state-financed infrastructure is still to come, but that may be more a matter of increasing resources than of a changed attitude.

There is little reason to suppose that at this date, or at any date earlier than C. Gracchus' tribuneships, the officials thought that it was the job of the state to make sure that people did not go hungry, except for taking action in severe emergencies.¹³ A full discussion would require us to face among other difficult tasks that of evaluating the authentic elements in the story of Sp. Maelius, who made the most famous attempt in early Roman history to deal with a food shortage—but did so, supposedly, as a private citizen and out of his own pocket, and as a reward was murdered by the patrician Servilius Ahala on the grounds that he was attempting to make himself king.¹⁴ It would also require a careful evaluation of the theory that a crucial element in the nutrition of the Romans, namely salt, was at the root of the expansion of Roman power in Italy.¹⁵

The most essential commodity of all apart from food was metal for military equipment, and about how that was acquired we know very little indeed. The Roman state could hardly be indifferent to the supply of base metals: plunder will have been part of the answer, but there may well be a hidden history here which did indeed involve official state action. Pliny senior's two enigmatic references to a senatorial decree that ordered the closing of *metalla* in Italy¹⁶ are probably an obscure sign that Rome's Italian wars were among other things a struggle for the peninsula's natural sources of iron and copper.

One of the most important non-military actions taken by a Roman government in or shortly before 300 BC was of course the introduction of Rome's first silver coinage. But what did that decision mean? The sheer availability of

¹² Coarelli (1995); cf. Cornell (1995: 395).

¹³ A century later, we find the curule aediles distributing grain at a low price in non-emergency conditions, Livy 21.50.1. Pliny, *NH* 18.15 tells of a curule aedile (M'. Marcius) of the early or middle Republic who made grain available at a low price (cf. the coin-type Crawford 1974: no. 245). All this implies that such activities were unusual (Marcius 'was the first to sell wheat at an *as a modius*'—which does not mean that many of his successors did). But note how in 189 the curule aediles fined grain-dealers for hoarding, *ob annonam compressam* (Livy 38.35.5, with Herz 1988: 30); no sign here that the procedure, as distinct from its scale, was unusual, or that the aediles felt inhibited by the private nature of commerce.

¹⁴ I take this to be much the most important of the stories about food shortages in the early Republic catalogued by Garnsey (1988: 168–72). The latter believes that already at this time 'the job of securing and distributing emergency grain rested on the shoulders of elected magistrates' (p. 177), and indeed that may have been the main point of the canonical version of the Maelius legend, but in the fourth century BC, or the fifth, matters may have been more complicated; I hope to return to this matter elsewhere. The main sources are Livy 4.13–16, Dionysius of Halicarnassus 12.1–4.

¹⁵ Giovannini (1985: 373–87).

¹⁶ Pliny, *NH* 3.138, 23.78.

silver and a desire to make large state payments must both have played some role. The new currency was also in a sense an imitation of the Greeks and perhaps a sign of closer links, not by any means always amicable, with the Greeks of southern Italy.¹⁷ Most scholars would deny, on the other hand, that the commercial advantages of silver currency can have been intended—but how can we be sure of that?

We are uninformed as to whether the magistrates and Senate were at this time willing to help Roman merchants who got into difficulties outside Roman territory. The question is complicated by the difficulty which still existed in the fourth-century BC Tyrrhenian Sea of distinguishing between maritime *razzie*, piracy and lawful trade.¹⁸ Among the events that require explanation are the 'Latin' colonization of Ponza in 313 and the establishment of amicable relations between Rome and Rhodes in or soon after 306.¹⁹ Rome's so-called Second Treaty with Carthage notoriously assumes that the Roman state can and must prevent Roman merchants from operating in certain areas.²⁰ It was probably not a novelty when third-century senators showed a protective attitude towards Roman and sometimes even Italian merchants who got into difficulties outside Roman territory.²¹

What a pity it is that we cannot write a history of fourth-century Ostia. For all its deficiencies as a harbour, which probably became more evident in Hellenistic times as the size of the largest merchant ships increased,²² the level of the Roman government's interest in the mouth of the Tiber is plainly a revealing index of its interest in trade. The archaeological evidence seems to take the settlement back to the very early fourth century, and indeed the decisive war against Veii which ended in 393 BC is a plausible context for an act of colonization or fortification.²³ This will have been a necessary act of defence, but also a comfort to any sea-borne trader who could call himself Roman.

Given the nature of the sources for Roman history around 300 BC, we could hardly hope for a much clearer picture than this. But it certainly does not look as if the leaders of the Roman state regarded the activities of Roman merchants with indifference.²⁴ |

Two hundred and fifty years later Rome was the capital of a great empire, and the governance of the Roman state had undergone vast changes. Rome now administered, in some sense, all of Italy south of the Rubicon and (as of

¹⁷ Cf. Burnett (1989: 56), Harl (1996: 24–6) (though I do not endorse such phrases as 'to announce her entrance into the concert of civilized powers' as a Roman motive).

¹⁸ Harris (1990: 500–501).

¹⁹ On the latter event see the controversial account in Polybius 30.5.6.

²⁰ Ibid. 3.24.4.

²¹ Harris (1979: 65).

²² Zevi (1994: 61–8), Tchernia and Viviers (2000: 771).

²³ See Adembri (1996: 39–67).

²⁴ See Willing (1998: 784–804 esp. 796–8) for the argument that the First Punic War had a commercial aspect to it.

50 BC) something like sixteen provinces. There must have been about 200 *municipia* and colonies, not to mention other city governments.

Andreau insists that there was no real commercial law at Rome, but that is true only in the sense that there was no body of law codified into that category; in another sense there was quite a lot of it.²⁵ And by the late Republic a number of legal developments had made life easier for businessmen of various kinds. Above all, the creation of the so-called *actiones adiecticiae qualitatis*—*actio exercitoria*, *actio institoria*, and so on—enormously facilitated commercial life. This was the work of members of the senatorial elite, specifically praetors, carried out in the mid-second or late second century BC (the exact chronology is subject to argument).²⁶ The consensual contract of sale (*emptio venditio*) came in at the latest in the course of the second century BC.²⁷ The anomalous area was the law of insolvency, which was by modern standards harsh, but that is hardly surprising, given the paucity of judges and their short tenure of office; furthermore, a very significant softening of insolvency law took place with the introduction, under Caesar or Augustus, of the procedure of *bonorum cessio*.²⁸

The city was at the end of the Republic a gigantic metropolis, by ancient standards, and it could not have survived without a complex physical infrastructure, which included *basilicae*, *horrea*, *macella* (food markets), porticoes, harbour works, and long-distance roads (some if not all of which were built for mainly military purposes).²⁹ Much of this was the work of the censors, as in the cases of the Basilica Porcia (184), Basilica Fulvia (179), and Basilica Sempronia (169), while a consul built the Basilica Opimia (121).³⁰ The first Roman food depot, the *Horrea Sempronia*, is also likely to have been built from public funds.³¹ The exact origins of Rome's *macellum* are not known, but when it was rebuilt after the fire of 210 BC and extended in 179, that again was censorial work.³² Porticoes too were often public works.³³

The censors sometimes undertook similar projects in the colonies, and it is fair to conjecture, I think, that local governments in the colonies and *muni-*

²⁵ Andreau (1994a: 86). In his brief survey of Roman law, Johnston (1999) has a 35-page chapter on commerce. Herz (1988: 55) simply assumes that the Romans possessed 'Handelsrecht'.

²⁶ Aubert (1994: 70–100).

²⁷ Johnston (1999: 79).

²⁸ Ibid. 108–10.

²⁹ There is no need to insist, here or later, on the multiple functions of porticoes and harbours.

³⁰ The censors of 179 and 174 were particularly active in the field that interests us here. But in the 50s it was private money that began the future *Basilica Iulia*.

³¹ On the supposed *Horrea Aemiliana* of 142 see Harris (1995a: 369).

³² Cf. Pisani Sartorio (1996).

³³ The *porticus Aemilia* of 193, like the Emporium of that year, was the work of the curule aediles (cf. Castagnoli 1980: 35–42). Were the official builders of republican *viae publicae* ever thinking about economic benefits? Laurence (1998: 146) implies that this was so, but can find no evidence. An inspection of the *Barrington Atlas* will remind anyone who needs to be reminded that there were innumerable public roads in addition to the military trunk roads.

cipia followed the example of the capital.³⁴ How much the extensive public construction of the Greek cities favoured commerce for its own sake is a question requiring a special study of its own.

But we cannot avoid the question of motives. One recent writer has claimed that all this building of infrastructure had nothing or virtually nothing to do with economic considerations: 'highways, harbours and aqueducts were often connected with values like *pulchritudo*, *amoenitas*, *salubritas*, *utilitas* by the literary authors and it is hard to see why governments would have thought and behaved different[ly].'³⁵ This is to make an unnecessary distinction (between the flourishing of commerce and general wellbeing) while ignoring a necessary one (no one claims that ancient cities built aqueducts to encourage trade). We need to look more closely both at what the Romans said (see below), and at their actual social structures.

With respect to the supply of food, however, Andreau over- rather than under-states the interest of the government. 50 BC obviously puts us in a period of greatly increased state intervention as far as the city itself is concerned. This interest had grown up gradually since the Second Punic War.³⁶ Under Clodius' law of 58, some 320,000 citizens were supposedly receiving free grain by a date early in Caesar's rule. But the exceptional nature of that number is clear: even the popular dictator reduced it to 150,000,³⁷ and most of the social class which dominated the upper levels of the Roman government would probably have liked to reduce it still further. It is also worth remarking that, while the Mediterranean poor did not live exclusively on bread, the government of this time concerned itself only with *frumentum*.

To what extent was the state now willing to provide assistance to Roman merchants in the provinces or outside them? All Roman merchants now operated against a backdrop of immense Roman power. Cicero notoriously asserted that it was Roman citizenship which protected Roman merchants to the ends of the earth.³⁸ In the *Verrines* and again in *Pro Lege Manilia* he claimed that Rome had 'often' undertaken wars on behalf of Roman merchants, which was perhaps a | polemical exaggeration but hardly a bald untruth.³⁹ Yet matters

³⁴ Cf. Cébeillac-Gervasoni (1991: 196), Panciera (1997: tables II, III and IX). But Jouffroy (1986: 324) concluded that the number of public markets and *horrea* in Italy and Africa was 'always modest' by comparison with such categories as temples and baths.

³⁵ Pleket (1994: 115).

³⁶ Viriouvét (1994), Coarelli (1994), and especially Erdkamp (2000) (who, however, tends to identify the food supply with the grain supply).

³⁷ Suetonius, *DJ* 41.3.

³⁸ II *Verr.* 5.166–7. For wealthy *negotiatores* as one of a provincial governor's major constituencies see *QF* 1.1.6.

³⁹ II *Verr.* 5.149: 'Quot bella maiores nostros et quanta suscepisse arbitramini, quod cives Romani iniuria adfecti, quod navicularii retenti, quod mercatores spoliati dicerentur?' 'Our forefathers undertook many large-scale wars because of injustices inflicted on Roman citizens, because of arrests of ship-owners and expropriations inflicted on merchants'; *Man.* 11. Andreau (1994a: 89) dismisses this kind of motive for making war as social not economic, but the distinction seems artificial.

could be considerably more complicated: when M. Fonteius, as governor of Narbonensis in the 70s, instituted a new *portorium* on wine, as he probably did, his aim was no doubt to raise revenue, but he can also be said to have had a trade policy of sorts.⁴⁰

How matters stood in the 50s we may expect to learn from Cicero and from *De Bello Gallico*. Not that we should assume either to be entirely typical. Cicero's constant interest in helping the *publicani* is striking, but some other senators undoubtedly loved them less. And Cicero as a *consularis* tried to keep his distance from actual merchants, however prosperous.⁴¹ Yet the vast Roman commercial and financial expansion into the provinces in the late Republic was based in part on the assumption that Roman power-holders would act supportively with regard to commercial and financial interests. A bloody example occurs in *De Bello Gallico*: Caesar sends a legion to suppress three Alpine peoples because they had been a nuisance to *mercatores*. In another case, the first Roman invasion of Britain, we see a reason why an army commander on the frontier would be inclined to seek the good will of *mercatores*: they were the people from whom one expected much-needed local intelligence.⁴² In general the kind of good order (*eunomia*) which resulted from Roman rule was particularly beneficial to prosperous men who needed to travel, in other words merchants.⁴³

A vast dossier of honorific inscriptions could be compiled which, both for this period and for the first centuries of the Empire (when the 'epigraphic habit' was at its strongest), would establish the links between on the one hand merchants of many different kinds and on the other particular officials ranging from minor local dignitaries to the proconsuls of major provinces.⁴⁴

⁴⁰ Unfortunately Cicero, *Font.* 19–20, does not show clearly what that policy was; cf. De Laet (1949: 79–84) and many other discussions; at pp. 65–88 De Laet surveys the republican *portoria* province by province.

⁴¹ But he was at dinner with C. Vestorius of Puteoli when he wrote *Ad Att.* 14.12; see D'Arms (1981: 48–55) for the full context. Garnsey (1988: 216–17) argued that some of the provincials enfranchised by Pompey were being rewarded for their cooperation in his *cura annonae* of 57. If so, some of them may have been merchants—but it would not have been quite decent to say so in the *Pro Balbo*.

⁴² Caesar, *BG* 3.1: 'Ser. Galbam cum legione XII. et parte equitatus in Nantuates Veragros Sedunosque misit. . . Causa mittendi fuit quod iter per Alpis, quo magno cum periculo magnisque cum portoriis mercatores ire consueverant, patefieri volebat', he sent Galba with the 12th Legion and parts of its cavalry, 'the reason for sending them was that he wanted to open up the route across the Alps, which merchants had been in the habit of using at great risk and with the payment of heavy duties'; 4.20. How a slightly later army commander perceived a new territory—i.e. primarily in terms of its economic resources—can be seen in Pliny, *NH* 6.161–2 (Aelius Gallus in Arabia). As dictator, however, Caesar had introduced tariffs on *peregrinae merces* (Suet. *DJ* 43.1). Suetonius seems to see this as an attack on luxury, but it might be more accurate to suppose that Caesar's intention was simply to raise revenue by a method which would avoid novelty and avoid putting serious burdens on the mass of his supporters.

⁴³ See e.g. Strabo 16.756.

⁴⁴ See e.g. *CIL* XIV.3603 = *ILS* 6171 (with *AE* 1955 no. 178) (the *navicularii* of Ostia), *Forschungen in Ephesos* III no. 25 = *IGSK* XVII. 1.3025 ('qui in statario negotiantur' 'those who do business in the slave-market' at Ephesus), etc., etc.

In virtually every case, however, the precise nature of these links is destined to remain obscure.

Thus the government provided a certain amount of legal and physical infrastructure, and it was prepared within certain limits to listen to and assist commercial and financial interests. But this statement probably conceals real differences of attitude within the central and the local political elites.

In the judgement of Nicolet, 'the Roman governing class' in the late republic 'was also a financial class—bankers and money-lenders and slave-dealers, distinguished only by the veil of hypocrisy from the mercantile aristocracies of Carthage or of Venice'.⁴⁵ And one certainly has to remember how little we know of the more down-to-earth and squalid sides of the elite's financial affairs in this as in every other period. Money-lending by men of consular and praetorian rank was a vital part of the system. Yet there is something very wrong with Nicolet's formulation. Andreau cannot have been happy to read that the late-republican aristocrats were bankers and money-lenders, since he has put much effort into defining just what *argentarii* and *nummularii* actually did.⁴⁶ |

But what is most misleading about Nicolet's formulation is that the majority of the borrowing and lending of the elite took place within a restricted social group and was guaranteed by social pressures more than by legal institutions. Cicero lent money, and was doubtless pleased to receive the highest return available, but he cannot properly be called a money-lender because he would never I think have lent money outside a given social network. To call the late-republican *consulares* 'bankers and money-lenders' has a certain crude shock-value,⁴⁷ but it obscures their particular modes of behaviour as well as the identity of Rome's real bankers and money-lenders.⁴⁸

As evidence of the fact that the aristocratic mentality was still strong we might cite the *Res Gestae*, which, in spite of being in a sense a document very much of its own time, embodies a thoroughly aristocratic approach to government. Its emphasis is of course all on victory, honours, largesse, and *grandeur*, and not on utility.⁴⁹ Much of the old ideology, one might say, is still intact. The reality of the Augustan regime, on the other hand, was in some respects radically new—and part of the novelty directly affected commerce, namely the creation of a super-fortune nominally in the hands of one man, a super-fortune furthermore whose owner had strong incentives to spend, and

⁴⁵ Nicolet (1994: 635).

⁴⁶ Andreau (1987a; 1999).

⁴⁷ Not that I altogether object to calling them 'slave-dealers': see Harris (1980a: 131–2) [[above, pp. 85–6]].

⁴⁸ Nicolet says that the upper-class financiers such as Atticus and Q. Considius 'no doubt' lent money to tradesmen and artisans, but there is no evidence for this, and even if *they* did, senators in general probably did not, for reasons of social distance. Paterson (1998: 152) maintains that the *negotiatores* in Cic. *Planc.* 64 were Cicero's 'social equals' (in 74), but that is not really said.

⁴⁹ H. Schneider (1986: 23) has this wrong, I think.

hence (to our minds at least, but here we must be wary of anachronism) a strong incentive to manage his own finances efficiently.

To return for a moment to the late Republic: I suggest that the perceived 'private' character of commerce is not in fact the reason why Roman governments to a great extent kept | away from it.⁵⁰ Rather, the most productive way of looking at the central government's attitude towards commerce is to see that attitude as aristocratic, within the framework of the somewhat 'achievement-oriented' ethos of the Roman aristocracy. It was aristocratic to build ostentatiously for the public good, aristocratic to legislate, aristocratic to protect respectable folk such as well-to-do merchants. It was also aristocratic to accumulate land, to distance oneself from prudentially or morally dubious ways of making money, and to consume. On the other hand, it would not have been particularly aristocratic to care for the entire food supply of the entire citizen body.

Let us leap forward now by another 150 years. I continue to think that emperors hoped that 'long-distance trade would flourish'. That is to say, on the perhaps rather rare occasions when their minds turned to the subject. They looked benevolently, if in most cases remotely, on men like L. Erastus of Ephesus, a sea-captain whom Hadrian judged to have been 'useful to his homeland'.⁵¹

The ideological texts, Pliny's *Panegyricus* and Aelius Aristides' encomium of Rome, are, however, somewhat elusive on the subject of commercial prosperity. What they most congratulate their hearers on is not the proliferation of commerce throughout the Roman Empire or for the benefit of all Roman citizens, but the fact that every possible product flows towards Rome the city.⁵² They are pleased to imply that this all happened as a result of transactions in a free market, and that in consequence no one is unhappy. It is the inhabitants of Rome or possibly the citizens of Rome who are the principal beneficiaries. Yet that is not quite all: the emperor, Pliny claims, 'has so much mixed people together by means of commerce that what is engendered anywhere is born everywhere', that | is to say 'is available everywhere'.⁵³ A negative fact is seldom registered: the imperial government, in spite of its appetite for revenue, never until Constantine's time imposed taxation on commerce as such.⁵⁴ It may also be taken as reasonably obvious that the

⁵⁰ Andreau (1994b: 12–13), like others, recognizes that Roman courts possessed and used the right to require *argentarii* and *nummularii* to produce the written details of a client's account.

⁵¹ SIG³ 838 = Oliver (1989: no. 82) = *IGSK* XV.1487.

⁵² *Pan.* 29: 'Instar ego perpetui congiarii reor adfluentiam annonae... Devehunt ipsi quod terra genuit', etc., etc., 'the influx of grain is in my opinion like a continuous gift... they themselves bring what the earth brings forth'; and see Aelius Aristides, *To Rome*, 11–13. There are signs of this attitude in Statius, *Silv.* 3.3.97, among other places.

⁵³ *Pan.* 29: 'ut, quod genitum esset usquam, id apud omnes natum videretur'. I take it that the indirectness of this statement was meant to keep the taint of luxury at bay. For a later time, cf. Herodian 4.10.4.

⁵⁴ In Egypt, however, occupations were taxed, including 'those who import and sell' a variety of commodities: Rea (1982); cf. Wallace (1938: 207–9).

provincial and city governments of the commercial cities of the empire were fully aware of the desirability of flourishing long-distance trade.⁵⁵

But officials at all levels presumably approved when cities promulgated regulations such as the one contained in chapter 75 of the Flavian Municipal Law (revealed to us by the Lex Irnitana in 1986): this regulation (the date is 91) said that no one

is to buy [*coemito*] or hoard [*supprimito*] anything or join with another or agree or enter into a partnership in order that something may be sold too dearly [*carius*] or not be sold or not be sold in sufficient quantity.⁵⁶

Sanctions followed (any *municipes* could sue). Local courts, in other words, had the right, in many places in the Roman Empire, to decide what was a fair price. We have no idea how often they used this right or the threat of sanctions, but Adam Smith (though he was against hoarding) would hardly have approved.⁵⁷

A small incident can be revealing. When, under Tiberius, | there was a shortage of papyrus and senatorial officials were appointed to supervise its distribution, no official is known to have worried about the fact that the trade in this commodity was normally, as we may presume was the case, in private hands. Pliny senior says that ‘otherwise life would have been turned into chaos’, and he takes that to be a sufficient explanation.⁵⁸ There were probably other similar incidents from time to time.

When Pliny junior wrote to Trajan about the proposed canal at Nicomedia he advertised its *utilitas* as well as its *pulchritudo*, but it is noticeable that considerations such as *utilitas* are almost wholly absent from Pliny’s Bithynian dossier.⁵⁹ If Trajan and Pliny were interested in the commercial prosperity of the province, which is not impossible, they did not think it decorous to publish letters on the subject. Another ambivalence can be seen in the uncle’s encyclopedia: the elder Pliny seems at first glance to find commerce

⁵⁵ Cf. Dio Chrysostom 32.36 for the congratulations he offers the Alexandrians on this point. Another possible way forward: the granting and withholding of the right to hold a market; Nollé (1999) leads in to the extensive but inconclusive bibliography. [[Another programmatic, if not ideological, text, Cassius Dio 52.9 (Maecenas’ advice to Augustus), advocates the unification of weights and measures. Corbier (2006: 256) observes that this never happened—but ignores the fact that the use of Roman weights and measures was widely diffused in many areas.]]

⁵⁶ González (1986: 172). Cf. Höbenreich (1997: 167–8). [[The legislator’s main thought may well have been for grain. Compare the inscription from Pisidian Antioch of the same date or almost in which the provincial governor sets a ceiling price for grain: *AE* 1925 no. 126.]]

⁵⁷ The nearest the central power came to promulgating such rules was to issue sanctions against *dardanarii*, speculators: *Dig.* 47.11.6 (Ulpian), 48.19.37 (Paulus). But the aim of these rules seems to have been simply to protect the *annona*.

⁵⁸ Pliny, *NH* 13.89.

⁵⁹ Pliny, *Ep.* 10.41.1. For *utilitas* see Frontinus, *De aq.* 89. [[For the unclear motives that led Trajan to allocate resources to the canal from the Nile to the Red Sea, his ‘Suez’ canal, see Aubert (2004b: 245–8).]]

admirable,⁶⁰ but a moment later he begins to denounce avarice and lament the moral effects of prosperity.⁶¹ He does not represent the whole culture, but he will not have been an isolated voice either.⁶²

How should we think of the emperor's own sector of the economy, as it was about AD 100? Its operations remain in many ways mysterious. Was there any effective central direction or control? One has the impression of a vast, amorphous, and directionless enterprise, but our sources about the actual operations of its supervisor, the *a rationibus*, and of other relevant officials are notoriously thin. The theory was that everything was under this individual's control, at least in late-Flavian times.⁶³ The scale of the operation was immense, and | from one end of the empire to the other, from Sitifis to Syria, from Judaea to Belgica, we can find places where agents of the imperial bureaucracy (if that is the most appropriate concept) seem to have dominated the economy.

Yet every large-scale economic activity of the imperial household necessarily involved the private sector as well. The place where we might hope to learn how emperors and such people as the administrators of the *ousiakos logos* behaved in relation to the non-imperial sector of the economy is obviously Egypt. Scholars appear to be more reluctant than they used to be about guessing the proportion of Egyptian land which was in imperial hands at any given date, but the general point is obvious that imperial interests must constantly have been trying to make the best of their situation in a more or less market economy.⁶⁴ At the other end of the empire, the Hadrianic regulations for mining at Vipasca are detailed ones, but they assume the participation of private citizens.⁶⁵ Even the imperial estates in Proconsularis, often cited as evidence of the enormous economic role of the imperial household, recruited

⁶⁰ *NH* 14.2: 'quis enim non...profecisse vitam putet commercio rerum ac societate festae pacis, omniaque quae ante occulta fuerant in promiscuo usu facta?' 'Who would not think that life has benefited from the exchange of goods and the common possession of long-lived peace, and by the fact that everything that had previously been virtually hidden away is now in common use?'

⁶¹ *NH* 14.4–5.

⁶² Scholars may be divided on this issue according to their specialization, with archaeologists particularly inclined to write such things as this: 'diversified commercial enterprises [were]... promoted [on the island of Brioni in Istria] by the policies of the Julio-Claudian emperors': Schrunk and Begovic (2000: 269).

⁶³ Statius, *Silv.* 3.3.95: 'uni parent commissa ministro'—the imperial wealth obeys a single servant of the emperor. The notion that the *a rationibus* 'did not work closely with the emperor' (Millar 1977: 106) is unfounded. His work dictated that he should stay in Rome much of the time and not peregrinate everywhere with his superior. This is not to assimilate his operations to those of a modern official.

⁶⁴ For what can be known at present, see especially Parássoglou (1978), Rowlandson (1996). Crawford [Thompson] (1976), who provided a still very valuable catalogue of the emperors' properties empire-wide, concluded unguardedly that 'the personal involvement of the emperor in his land [was] a constant factor in the history of imperial estates' (p. 56).

⁶⁵ Domergue (1983). See further Ørsted (1997: 43–7).

their labour in what was in principle a free market and sold some of their product in a free market too.⁶⁶

The Vipasca regulations will serve to remind us of the multifarious character as well as the huge extent of the emperor's economic interests. Tiberius had apparently confiscated many of | such metal-ore mines as were not already in imperial hands.⁶⁷ No one would doubt that in this period the imperial household's interests were intricate and pervasive. It was, in a not at all metaphorical sense, a force in commercial life. Yet how did it behave? We might expect it to have tried to monopolize profitable sectors of production and trade. That does not seem to happen, at least not by the time of Trajan [[but see the Addendum]], and one wonders why not. Inefficiency, or intentional self-restraint?

There were complex and potentially conflicting ideals, the emperor's *liberalitas*, but also a certain notion that his sources of income should be the proper ones. Every reader will recall Suetonius' comments on the culpable *cupiditas* of Vespasian, which included not only raising taxes, but also the fact that he 'negotiationes... vel privato pudendas propalam exercuit', sometimes buying things purely in order to sell them later at a profit (that is to say, instead of simply selling the products of his estates).⁶⁸ One remembers the *Lex Irnitana*.

As in previous eras, however, it is the legal system and the creation of physical infrastructure that most clearly show that governments paid a certain amount of attention to the smooth functioning of trade. A recent historian of Roman law, believing that current orthodoxy regards the Roman economy as 'underdeveloped' (it was not an accident that he was writing in Cambridge), was somewhat puzzled by the sophistication of Roman commercial law.⁶⁹ His own evidence powerfully suggests that the 'underdevelopment' of the Roman economy was very relative. For the legal system took extensive cognizance of the problems and disputes which arose in commercial life, and the solutions which it provided were balanced and increasingly sophisticated ones.⁷⁰

This is also the context, ideally, in which to reconsider the controversial history of the imperial government's policies towards *collegia*;⁷¹ but I will for the time being simply assert that in many Roman cities the *collegia* had

⁶⁶ Kehoe (1988: esp. 143–4, 92–3) (but I do not endorse his view of the 'enviable position' [p. 225] of the imperial *coloni*).

⁶⁷ [[According to Suetonius, *Tib.* 49, 'plurimis etiam civitatibus et privatis veteres immunitates et ius metallorum ac vectigalium adempta' ('he took away from very many cities and individuals their old tax-immunities, their mining rights and their right to tax-revenues'), which is exceedingly vague.]] There was never a full imperial monopoly; see Delmaire (1989: 421).

⁶⁸ 'He openly carried on business affairs that would have been unseemly even for a private citizen', Suetonius, *Vesp.* 16.

⁶⁹ Johnston (1999: 11–12).

⁷⁰ Well argued with respect to the wine trade by Frier (1983: 257–95).

⁷¹ For part of the story see De Salvo (1992: 378–482). Trajan allegedly brought a *collegium* of bakers into the administration of the capital's food supply: Aurelius Victor, *De Caes.* 13.5, with Herz (1988: 110–13). [[And see the Addendum to this chapter.]]

(contrary to what is often said) important trade-controlling functions, and that the imperial government's willingness to permit the functioning of very many such *collegia* did indeed amount to something of a commercial policy, albeit a *laissez-faire* and absent-minded one. As far as infrastructure is concerned, it was not simply the scale that had changed by AD 100, but there was far more being done in the provinces, at the expense of philanthropists but also at the expense of governments. Nonetheless it remains to some extent an open question how we should see such actions. Schneider has argued that providing physical infrastructure for the imperial economy was a necessary part of the emperor's search for political legitimization.⁷² That is largely, I suspect, a modern fantasy: emperors took their legitimacy from various sources, all of which are pretty well visible in the inscriptions and monuments, but there is no sign at all that useful public works had anything to do with the matter. Trajan surely did not solve the problem of the harbour at Ostia, as he did at long last, in order to legitimate his own rule, but because it was an obvious public benefit of a conspicuous kind for the city of Rome, and one which he could afford to pay for.⁷³ He naturally took ample credit. |

It may be that since Neronian times emperors had started to become more active in this respect: consider in Rome itself the *Macellum Magnum* of Nero on the Caelian, and the *Horrea Piperataria* and *Horrea Vespasiani* of Domitian.⁷⁴ It is under the Flavians that we first hear of Rome's *portus olearius*.⁷⁵ Interestingly, it was in the decades around AD 100 that the urban elites in Egypt seem to have been most active, both as private persons and as officials, in providing facilities for commercial activity.⁷⁶

Let us return to the food supply, simply in order to define the extent of the state's involvement. Once again, this involvement has been over-stated (as it very frequently was before the studies of Rickman and Casson), most notably, in recent times, by those who believe that the state already concerned itself with supplying civilians with foodstuffs other than grain in the period before the Antonines. But in one respect there seems to have been an interesting change of attitude: whereas at one time the central government had taken no responsibility for any population other than Roman citizens resident at Rome, certain texts now suggest a wider view. When Trajan wrote to the skittish

⁷² H. Schneider (1986). For governmental interest in infrastructure see Rougé (1966: 465–6), and for Egypt, Arabia, and Judaea, Sidebotham (1986: 48–77). The Roman fort built at 'Abu Sha'ar on the Red Sea in 309–10 is epigraphically attested as intended to assist *mercatores* [[Bagnall and Sheridan (1994: esp. 162)]]]. On port installations, see e.g. Greene (1986: 29–30). As far as *macella* are concerned, De Ruyt concluded that while they were normally built by private philanthropists, they were supervised and renovated by cities (1983: 352–60).

⁷³ For Trajan's other harbour works in Italy see Purcell (2000: 409).

⁷⁴ See *LTUR* III, s.vv.

⁷⁵ See the inscription published by Panciera (1980: 238–41) = *AE* 1980 no. 84.

⁷⁶ Alston (1998: 184–5). On the limited range of Hadrian's interest in economically advantageous building projects, see Boatwright (2000: 119–25) (on Ephesus: p. 100 n. 79).

citizens of the second city of the empire, Alexandria, he said that he had commended them to their governor (the prefect Pompeius Planta) so that the latter could 'take every care in providing for your undisturbed tranquillity and your food-supply (*euthenia*) and your communal and individual rights'.⁷⁷ No previous Roman emperor is known to have taken any responsibility for the food-supply of any of the major cities other than the capital itself. An unidentifiable second-century emperor, in a letter to Ephesus, accepted, in a certain sense, the responsibility for seeing that 'the other cities' (besides Rome) should 'be well supplied with necessities' (*euporein ton | epitedeion*).⁷⁸ Even in Rome itself, however, most of the grain which was imported was not the government's at all but the object of private commerce, and the majority of the inhabitants did not receive free grain. Not that the market operated in isolation from government actions, and as time passed intervention increased.⁷⁹

In other cities too private merchants brought the grain to market, with more or less frequent intervention by public officials and by benefactors.⁸⁰ Garnsey concluded that

city governments desired very little in the way of permanent institutions for maintaining a regular food supply system and coping with food crisis... regular distributions of free grain were very rare in the cities of the Graeco-Roman world.⁸¹

As far as the cities of Asia Minor are concerned, however, this view has been judged too pessimistic.⁸²

When did the central government begin to concern itself with the capital's supply of commodities other than grain? There is no evidence, nor is it likely, that the government | imported olive oil from Baetica for the benefit of the Roman public as early as the time of Augustus. It is not until the reign of Marcus that we have evidence of an imperial subsidy for this commodity, and the innovation is not likely to have occurred much, if at all, earlier.⁸³

⁷⁷ *P.Oxy.* XLII.3022.

⁷⁸ *IGSK* XII.211, line 12. Occasionally emperors were involved in the provinces' problems in obtaining grain. This is probably the significance of the procurator for the *annona* of Narbonensis and Liguria in *CIL* XII.672 = *ILS* 1432. Greek cities quite often had officials called *sitonai* who took responsibility for the grain supply, who were meant to see to it that grain reached their city and was sold at a bearable price: see Pavis d'Escurac (1987). The equivalent officials in the western cities were the *curatores annonae*. The money might come from the city's treasury or from the magistrate's private resources (pp. 120–21).

⁷⁹ From the perspective of the early second century, the correct way of dealing with the state *annona* was to give proper consideration to the interests of the *aratores* (i.e. the landowners) and the *negotiantes* (i.e. the merchants) as well as those of the *populus*: Suetonius, *DA* 42.5.

⁸⁰ On official *sitonai* and *elaionai* (grain- and oil-buyers) in the cities see respectively Pavis d'Escurac (1987) and Robert (1969).

⁸¹ Garnsey (1988: 272). See Mrozek (1994: 95–101) on the *curatores annonae* and so on of the towns of Italy. On the steps taken to ensure supplies at Oxyrhynchus see Alston (1998: 185–6).

⁸² Strubbe (1989: 118).

⁸³ In or shortly after 140s the olive oil merchants from Baetica had a former *praefectus annonae* as their patron at Rome: *CIL* VI 1625b = *ILS* 1340 (revised by Tchernia 1983: 155–6, and Panciera 1980: 243–4). *CIL* VI 1620 = *ILS* 1342 is a dedication to a *praefectus annonae* by

Did the imperial government of Trajan's time show any interest in protecting or assisting external trade? It did not, as far as we know, use armed force on behalf of merchants outside the frontiers—but our sources are very poor and in any case such measures may not have been needed as much as in earlier times, since many of the nearby outsiders must have known better than to be provocative.⁸⁴ And whereas Roman merchants along the lower Danube must have done very well out of Trajan's Dacian wars and the annexation of Dacia, their interests are not likely to have crossed the emperor's mind in the crucial periods of decision. That may not be quite the whole story, however. We may for instance think, not perhaps that Trajan annexed Arabia Petraea in order to assert Roman control over a trade-route,⁸⁵ but that his efforts to push the frontiers forward in certain regions (with the evident support of many of his subjects), while they were partly the consequence of a longing for fame, were also conditioned by a variety of fiscal and financial benefits; these benefits may have included the unfettered operation of | merchants who were perceived as bringing goods to Rome. We need to look at the local level for concrete instances of cooperation between *negotiatores* and the military (the Red Sea being a particularly intriguing area).⁸⁶

We cannot altogether evade the subject of taxation. If it is true, as it probably is, that the sea-ports of Italy, but not the land frontiers, were free of *portoria*, that was probably a tribute to the political clout of the large-scale sea-borne merchants and their friends.⁸⁷ Elsewhere, the Zarai Tariff, a well-known document a hundred years later than the date we have under immediate consideration, requires a comment.⁸⁸ It gives varying rates for the tariffs on various commodities, powerfully suggesting that the central government

the *mercatores frumentari et oleari Afrari*. Cf. SHA, AP 8.11. An assistant of the *praefectus annonae* under Marcus: CIL II.1180 = ILS 1403, with Harris (2000: 719) [[above, p. 164]]. The imperial procurator in charge of receiving oil at Ostia: CIL XIV.20 = ILS 372 (AD 175). For evidence of a distribution of oil in 177–180 see CIL VI.34001 = ILS 9022.

⁸⁴ And cooperative foreign nations could be rewarded with access to trade inside a Roman province, as with the Hermunduri in Raetia, Tacitus, *Germ.* 41.1. For a recent survey of Rome's trade beyond the northern frontier under the High Empire see Lucchelli (1998: 165–209) (p. 168: treaty limitations on trade in the second century).

⁸⁵ Judged improbable by Millar (1993: 93).

⁸⁶ Merchants and soldiers could even be the same people: see AÉ 1978 no. 635 (a centurion in Slovakia). De Salvo (1992: 458–9) attempted to revive Rostovtzeff's idea that there was at one time a Roman naval fleet stationed in the Red Sea, but SEG VIII.703 does not really seem to have contained the title of an official. Nonetheless, as Raschke observed (1978: 649), 'it is difficult to believe that the Roman government did not maintain some warships on the Red Sea'. [[It turns out that Rostovtzeff was right, at least for a certain period: Villeneuve (2004) reports a Latin inscription put up by Roman soldiers in the Farasan Islands in the southern Red Sea in 143–44.]] For a Trajanic official taking action to improve the safety of merchants at Phasis in the Black Sea, see Arrian, *Periplus Ponti Euxini* 12.

⁸⁷ No source says that the Italian *portorium* had been abolished, but the total silence of the epigraphical sources is sufficient evidence.

⁸⁸ CIL VIII.4508.

intended to treat some forms of commerce more gently than others; for example, the rate of duty charged on the importation of slaves was lower than for any other major commodity. That may well not have been a recent development. But the most striking of Roman trade tariffs is the 25 per cent that seems to have been exacted at the eastern frontiers of the Empire⁸⁹ (and perhaps not only there: we do not know what had to be paid at the Rhine or Danube frontiers). It was a Caesarian or Augustan invention, I imagine. The relatively punitive rate may have stemmed from a desire to discourage luxuries or the loss of Roman currency, or both of these things at once; whoever put it into effect and kept it in effect was not in any case intent on maximizing trade. |

It is a scholarly truism that no Roman emperor had an economic policy,⁹⁰ but it is a truism which, as we have seen, conceals almost as much as it reveals. Theory, comprehensiveness, and clarity were lacking. Motives were bundled up together, and *homo oeconomicus* certainly did not always rule. Governments often looked benevolently on commercial activities, up to a point, and sometimes took action in consequence; but sometimes other concerns intervened.

We can move on now to AD 300. The traditional view has been that the tetrarchic economy was subject to massive state control, represented and symbolized by the great Price Edict itself,⁹¹ which seems to express a resolutely interventionist mentality. According to this line of thinking, an increasingly bureaucratic state had come to dominate long-distance trade, and under Constantine if not the tetrarchs the government began to regiment private merchants who operated in key sectors of the economy, by means of regulating the guilds. Areas of production which under the high Roman Empire had been in private hands were now imperial: the emperor's own workshops now produced all the arms needed by the state, and also produced textiles.⁹²

An alternative outlook has gained a lot of ground recently, and for good reasons. It is possible to set out a case for not estimating the degree of state control in commercial life under the tetrarchy quite so highly. In this view, the Price Edict of 301 was a solitary and, before long, futile gesture.⁹³ Sirks has emphasized that, even in the later Roman Empire, it was the free market which fed most people.⁹⁴ And indeed certain kinds | of economic activity which had formerly been imperial had started to be quasi-privatized, or so at least it can be argued.⁹⁵

⁸⁹ At or near Palmyra: *AE* 1947 nos. 179 and 180. In Egypt: see the allusions in the papyrus published by Harrauer and Sijpesteijn (1985: 124–55) (*SB* XVIII.13167).

⁹⁰ E.g. Casson (1989: 35–9).

⁹¹ For the precedents, or rather the lack of them, see Corcoran (1996: 213–15).

⁹² For these workshops see the summary of Jones (1964: 2.834–7).

⁹³ Bagnall (2000: 89–90).

⁹⁴ Sirks (1990: esp. 21). Cf. Carrié (1994: 201). For the now almost conventional view that even a generation after Diocletian the economic concerns of the government [identified with the central government] were 'narrow', see Garnsey and Whittaker (1998: 319).

⁹⁵ Carrié (1994: 179).

One view is that the imperial legislation of this era did nothing either to encourage or to hinder trade; the financial interest of the central government was simply in tax-gathering.⁹⁶ Yet this is a somewhat crude formulation, or rather it concentrates on the wrong kind of evidence. Roman central and local governments had seldom legislated about trade, but they had nonetheless often acted, and it would be perverse to suppose that they failed to notice the revenue-enhancing potential of the private wealth acquired by merchants even before Constantine introduced the *collatio lustralis* and for the first time in Roman history began taxing commerce as such Empire-wide.⁹⁷ And while it may well be true that the government did not use the *corpora* directly except for the free or subsidized *annona*,⁹⁸ the fact that professional guilds were allowed to exist was still, as it had been 200 years earlier, a policy in itself.

What was now the attitude towards trade of the officials who actually administered the laws? I suggest that there was a certain extra degree of scepticism. When a government speaks in an official pronouncement about *avaritia*, repeatedly and quite clearly attributing this quality to merchants—as the Price Edict does⁹⁹—we may suppose that it does not wish them well. This language was as far as we know a novelty. The *collatio lustralis* does not by itself prove very much, but it may be that the governments of this time (by which I mean the tetrarchs and their successors down to Constantine) looked upon merchants with less benevolence than their predecessors.

A large proportion of the refinements of the Roman legal system had been the work of the jurists of the second and early third centuries. Did the developments in law and the administration of law which took place around AD 300 show any interest in the maximization of trade? I see no reason to give a positive answer to this question. We would also like to know what had happened to the quality of provincial administration since the days of Trajan. A recent study, noticing that the imperial rescripts of the tetrarchs ‘assume a smoothly functioning system’,¹⁰⁰ demonstrates how difficult it is to give a proper answer to this question. The time has perhaps not yet arrived to give an account of the interest of late-Roman governments in the economy’s physical infrastructure. It is so difficult to know what is typical, all the more so because of the thinning-out of the epigraphical record, all the more so because many Roman cities needed to maintain what they already possessed by way of infrastructure rather than invest in grandiose new

⁹⁶ Ibid. 192.

⁹⁷ On this tax see De Salvo (1992: 317). On the introduction of the *chrysargyron* in Egypt see Bagnall (1993: 153).

⁹⁸ Carrié (1994: 184).

⁹⁹ *avaritia desaeiens*, 1.6, *gliscentis avaritiae*, 1.7 (p. 91 Lauffer), and so on at length. [[*Avaritia* is mentioned eight times in all. It is also of some relevance that when the governor of Phrygia Flavius Asticus had the Edict put on display he alleged that it was intended to ensure ‘just prices’ (Crawford and Reynolds 1975).]]

¹⁰⁰ Corcoran (1996: 239).

projects. Governments do not seem to have been obsessed by the utilitarian, any more than in previous ages. It seems significant that from the time of the tetrarchs down to the late-fourth century, the central government made noteworthy efforts to keep the ambitious trunk-roads of the high Empire in working order, and sometimes did this in places which seem to have had little or no military importance.¹⁰¹ But of course that may have been more a matter of grandeur than practical utility.

It was scarcely more true in AD 300 than it had ever been that the central and local governments regarded themselves as being under an obligation to feed all the citizens. As is well known, the range of Roman *annona* itself had spread since Aurelian's time to include wine and meat, as well as grain (bread) and oil. There were now grain distributions in a number of other cities too.¹⁰² Although we cannot quantify the number of beneficiaries, no one should doubt that they were a minority,¹⁰³ and in the fiscal conditions of tetrarchic times it could hardly have been otherwise. What overall effect these distributions are likely to have had on the Roman economy is an extraordinarily neglected question (in spite of the fact that much of the bread distributed by the state was made of grain which had been paid in as taxation in kind,¹⁰⁴ there must have been some net stimulation of demand); but we are not obliged to answer the question, since commerce as such was not the emperors' focus.

As far as military and diplomatic support for commercial activities is concerned, Roman armies were now more vulnerable (by comparison with those of Trajanic times) and may seldom have been able to help. Certain regulations give the impression that maximizing the Roman Empire's external trade was in any case far from being a governmental priority. We happen to hear from Paulus that it was a capital offence to sell to 'enemies' whetstones, likewise iron, wheat, or salt.¹⁰⁵ That seems a nicely limited list (the fourth and fifth centuries eventually saw this list extended). But in 298 the tetrarchic government restricted trade with Persia to a single *commercium*, that is to say trading post, at Nisibis,¹⁰⁶ understandably preferring revenue-collecting efficiency to the operations of a free market. These were commercial policies.

¹⁰¹ Cf. Harris (1991).

¹⁰² See Durlat (1990: 437–41).

¹⁰³ Cf. Carrié (1994: 184). On the role of the free market in supplying the basic food needs of the late-antique city of Rome, see De Salvo (1992: 90–92) or, better, Lo Cascio (1999: 163–82).

¹⁰⁴ Ibid. 164–6.

¹⁰⁵ Dig. 39.4.11.pr. For the later development of such regulations see Callu (1993: 490 n. 18).

¹⁰⁶ Petrus Patricius fr.14 (*FGrHist* IV, p. 189), who implies without stating it that this was to be the only place for Roman–Persian trade; the Persians agreed reluctantly. For later developments of this kind see Jones (1964: 2.827). The Nisibis plan naturally did not last: see e.g. Ammianus Marcellinus 14.3.3 (for later developments see De Ligt 1993: 53–4). Valens and Valentinian I apparently tried a similar policy in Pannonia, limiting foreign trade to two particular places (Themistius, *Or.* 10.135cd; see *ILS* 775 for the *burgus* called *Commercium*, *qua causa et factus est*, constructed on the Danube near Solva in 371).

Part of the point of this article has been to introduce complications and nuances, but its conclusions may be summarized as follows. In most periods (the tetrarchy may be something of an exception), Roman elites were entirely conscious that trade added to life's amenities for (some) people in Rome and elsewhere. But the actions they took in consequence fell within limited traditional Roman areas of governmental activity, such as on the one hand the refinement and adjustment of the law and on the other the building of infrastructure (the latter is not to be dismissed as simply an exercise in accumulating prestige). Governments came to accept some responsibility for feeding the citizens, but the sense of obligation was always local, and that applied to the central government in Rome. Emperors, being public officials but simultaneously private individuals of immense wealth, broke down in practice at least some of such inhibitions as there were that hindered state involvement in actual commerce. Insofar as there are any hints of a changed attitude in AD 300, they suggest that the maximization of trade had sunk still further in the list of governmental priorities.

[[Addendum

What did the Lex Irnitana mean when it gave a remedy against those who sold 'carius', 'too dearly' (cf. above, p. 210)? I have heard it suggested that no concept of a 'fair price' is involved, and that the intention was merely that the *market* price should not be exceeded. But it seems obvious that there is an implicit reference to normality and to fairness. Much later, the governor's proclamation that accompanied the copy of Diocletian's Price Edict from Aezani in Phrygia referred, as I should have mentioned, to the 'just prices' that the edict laid down (line 5, cf. 8–9) (Crawford and Reynolds 1975); but in this respect he goes beyond the language of the edict itself, as the editors point out. One might suspect that the notion that governments ought to favour just prices had a wide circulation but virtually no practical influence.

With regard to governmental attitudes towards *collegia*, see further De Ligt (2000: 242–52) and Liu (2009: ch. 3), who concludes after a detailed discussion that the central government 'promoted' certain types of *collegia*, including those of the textile-dealers.

Isolating four dates, as I did in this paper, naturally tends to distract attention from historical processes. The date AD 100, in particular, seems to fall in the midst of a long period stretching perhaps from Vespasian to Marcus, in which governmental involvement in commerce tended in various ways to increase. I will add one item: Hadrian's involvement in protecting what were now vast imperial holdings of woodlands in Northern Lebanon, where he had at least 800 inscriptions incised, reserving for himself the use of four species of trees (see *IGLS* VIII, 3, ed. J.-F. Breton; 187 of the inscriptions survive). His exact motives are unknown (it may be that his main concern was to ensure timber supplies for imperial building projects), nor do we know how much novelty was involved, but the effect was to reinforce the emperor's ability to benefit from an enormously valuable asset, possibly at the expense of private interests.]]

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Part V

Money

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A Revisionist View of Roman Money*

(2006)

In the definition of *pecunia* is included not only coinage but everything else both immovable and movable, and whether it is an object or a claim.

(Hermogenianus)¹

There are several different sorts of paper money...

(*The Wealth of Nations*, Book II, ch. II)

All Roman money consisted of coins. Such has been the consensus view, but it is mistaken and gravely misleading. In this paper I shall suggest that at the very least the entire question of the Roman Empire's money supply must be seen from a perspective different from the usual one.

Here is a recent historian of the late-republican economy: as in all pre-industrial economies, there was, he says, 'a very inelastic money supply, consisting almost exclusively of state minted coins with a chronic² lack of small denominations, supplemented by a limited supply of bullion, most of which was tied up in decorative objects'.³ That is the conventional opinion, except that some would probably balk at the chronic lack of small denominations. A representative Roman numismatist, though aware of other means of making payments, holds in practice that the only money that mattered in the Roman Empire was coinage.⁴ For Michael Crawford and Richard Duncan-

* I warmly thank Jean Andreau, Jean-Jacques Aubert, Alessandra Casella, Marcello De Cecco, Richard Duncan-Jones, Martha Howell, Elio Lo Cascio, Paolo Malanima, and Peter Temin, who all read and criticized an earlier version of this paper with salutary effects. It is obviously not to be presumed that they agree with my conclusions. I am also extremely grateful to St John's College, Oxford, for the opportunities provided by a visiting fellowship.

¹ "‘pecuniae’ nomine non solum numerata pecunia sed omnes res tam soli quam mobiles et tam corpora quam iura continentur", *Dig.* 50.16.222.. See further below, p. 231.

² 'chronical' in the original.

³ Verboven (2002: 116); yet this author recognizes that 'purchases of property were commonly made on credit or were financed by borrowing': Verboven (2003: 53).

⁴ Howgego (1995: 22) etc. Cf. Beyer (1995: 43). Elsewhere Howgego wrote two very useful pages (1992: 13–15) on the role of credit in the Roman economy, noting that 'purchases on credit could allow many monetary transactions to take place with little actual use of coin' (p. 13), but taking the problem no further.

Jones, Britain's leading authorities on the monetary history of the Roman Republic and the Roman Empire respectively, money supply has always been synonymous with coinage. For Lo Cascio, years ago at least, '[Roman] money was coinage'.⁵ Finley—more intent, as usual, on the Greeks than on the Romans—was simply adding his authority to a long-established doctrine when he wrote that 'money was hard coin, mostly silver'.⁶ Voices of protest have | occasionally been heard (e.g. Mrozek),⁷ but they were generally dismissed.⁸ In recent years there have, I think, been growing signs of disquiet,⁹ but the existing edifice has yet to be demolished.

In the first part of this article I shall briefly set out and discuss some Roman texts, together with some material facts, that seem to undermine the conventional view. I shall then ask how we can expect to recognize Roman money when we encounter it, taking into account what economists say about money's defining properties. I shall then come to the central question, the role of credit in creating Roman money. It will be necessary to size up the importance of fiduciary coinage and of commodities-used-as-money in Roman monetary history, before offering some guesses as to how much non-coinage money may have added to the money supply; but it will be maintained that the concept 'the money supply of the Roman Empire' is an imperfect instrument for analysing the actual Roman economy.¹⁰ There will be some brief notes on

⁵ Lo Cascio (1981: 76). The introduction to Lo Cascio (2003), however, shows (pp. 10, 13) that by 2003 he was more inclined to make credit a major element in the Roman financial system.

⁶ Finley (1985: 141); he wrote this before Duncan-Jones brought out the massive importance of gold in the Roman imperial stock of coins. Later on the same page Finley wrote that 'all lenders were rigidly bound by the actual amount of cash on hand; there was not, in other words, any machinery for the *creation of credit*'; not so, as we shall see. Cohen (1992: 11) amusingly contrasts this tone with the more diffident one employed by modern monetary theorists.

⁷ Mrozek (1985). His book on interest (2001) does not strengthen his case. Concerning the important paper by Temin (2004) see below, p. 232.

⁸ Partly, it will be admitted, because of the use of some weak or fallacious arguments. Von Freyburg (1989: 93) devoted a paragraph to upholding the consensus view ('Der Staat besass also mit dem Münzmonopol auch das Geldmonopol'), even though he recognized that payments were sometimes made without coinage or commodities (his arguments will be considered below). Andreau (1999: 1) held to the traditional view, even though he knew that payments were sometimes made without coin, because 'coins constituted the only organized system of monetary instruments', thereby contradicting his own earlier definition of money. But see the following note.

⁹ Hopkins (1995–6: 53 [2002: 212]) treated the silver coinage of the Republic as virtually synonymous with the money supply, but then interestingly observed (p. 63 = p. 228) that 'the volume of coins in circulation [in the Roman Empire] was increased by the operation of credit', without building on this. Andreau (2000: 785) admits that 'banks created additional purchasing power'. Foraboschi (2003) notes that the loans of the Sulpicii (on which see below) added to the money supply, and detects 'credit money' at work in the Roman economy, but draws no large conclusion except that there was a *chronic* shortage of coinage, which is not in fact attested; debt on the other hand was as old as Rome. Rathbone (2003) speaks, correctly as I think, of 'paper transactions [that] free[d] monetised exchange from the heavy constraint of the supply of coinage' (p. 226). I made some comments along the same lines in Harris (1993b: 21) [[below, p. 301]].

¹⁰ I should say at once that my doubts on this score are not of the Polanyi type discussed and rejected by Temin (2001: 173–4). [[...]]

how matters changed in the third century, and in the conclusion it will be suggested that the prevailing view of classical Greek money is one of the reasons why the complexities of the Roman monetary system have often been underestimated.

The chronological frame is more limited than it might be, roughly 100 BC to the Severans. The earlier republican part of the story, prior to 100 BC, is quite speculative (though not difficult to construct in outline). The later imperial period presents a different set of problems, and my comments will scarcely be more than an appendix.

CONGRUENT INCONGRUITIES

Many Roman texts seem to suggest that there is something wrong with the conventional account, and these texts all fit together. How did Cicero transfer the 3½ million sesterces he paid for his famous house on the Palatine (*Fam.* 5.6.2—this was by no means the largest property price we know of in the classical city of Rome),¹¹ at a time when Rome had practically no gold coinage? It seems singularly unlikely that his slaves counted out and loaded 3½ tons of silver coins¹² and transported this cargo through the streets of Rome (not that Roman ideas of inconvenience were necessarily the same as ours). When a certain C. Albanus bought an estate from a certain C. Pilius for 11½ million sesterces (*Cic. Att.* 13.31.4), did he physically send him this sum in silver coins?¹³ Without much doubt, these were at least for the most part paper, or rather documentary, transactions (the crucial documents will have been waxed tablets). The commonest procedure for large property purchases in this period was probably the one casually alluded to by Cicero elsewhere: a Roman knight becomes enamoured of a certain property at Syracuse, and ‘nomina facit, negotium conficit’, ‘he provides the credits [or “bonds”], <and so> completes the purchase’ (*De off.* 3.59).¹⁴ This practice is reflected in Cicero’s letters.¹⁵ And when in *Pro Caecina* Aebutius’ bid for a rural property being sold at auction is successful, he concludes the affair by

¹¹ Clodius paid Scaurus 14.8 million; for this and other cases see Shatzman (1975: 22–4). My question does not concern the origins of Cicero’s payment—he may possibly have been joking when he said (*ibid.*) that he had borrowed a large part of it—but the mode of payment.

¹² $875,000 \times (\text{say}) 3.86 \text{ gr. (see Crawford 1974: 594)} = 3,377.5 \text{ kg.}$

¹³ $2,875,000 \times 3.86 \text{ gr.} = 11,097.5 \text{ kg. Cf. Rathbone (2003: 224).}$

¹⁴ The fact that the purchaser was being royally swindled is irrelevant here. The lawyers have made very heavy weather out of this passage: cf. A. Watson (1965: 30–32).

¹⁵ *E.g. Att.* 12.47.1 (he contemplates a purchase but cannot do it without a particular *nomen*); 13.29.1–2 (where ‘ut etiam repraesentatione confidam’ might be taken to imply that cash payment might suit the purchaser better, presumably because *nomina* were not worth quite their face value even in the best of circumstances; both the *natura* and the resources of the debtor could affect their acceptability: *Att.* 12.5a).

‘promising money to the *argentarius*’, the banker (*Caec.* 16), and about that at least there was nothing in the least irregular: no one denied that the property had really been sold—the only question about the sale was whether Aebutius was acting for someone else.¹⁶ And you might buy in instalments: when Cicero bought out the share of the *horti Cluviani* that had gone to another legatee (*Att.* 13.46.3), he did so in three payments spread out over nearly a year (*Att.* 16.2.1), in effect taking a loan from the seller. None of which is to deny that coins might sometimes play considerable roles in major property transactions (see below).¹⁷

But what about bullion? It is frequently imagined that, under the Republic at least, large payments were made in gold bullion, and there was indeed bullion in circulation; but there is no evidence in Cicero’s extensive writings or elsewhere that gold was a regular means of payment before the minting of gold under Caesar’s dictatorship. Expert scholars have sought for evidence that individuals bought things with gold or silver bullion under the Republic, and have found none. Crawford catalogued 335 republican coin hoards for the years 150–27 BC: exactly two of these 335 can be considered to have had a serious bullion component.¹⁸ And as Andreau points out,¹⁹ the archaeology of the Vesuvian cities, which has produced every imaginable kind of find, has never produced a single ingot of gold or silver.²⁰ Of course we do have *some* explicit evidence of gold bullion in private hands under the Republic (*Cic. Cluent.* 179), but it was apparently a store of wealth, to | be exchanged against more spendable assets in times of emergency.²¹ ‘Gold’ was what a very rich man such as Rabirius gave to a friend such as Cicero who was scurrying into exile (*Rab. Post.* 47), his credit shot—letters of credit might not be honoured if presented by a man in Cicero’s position, and coins once again were bulky—but

¹⁶ The text does not exclude that what Aebutius was promising to do was to pay coin.

¹⁷ It is evident from *Lex Agraria*, line 74 (see Crawford et al. 1996: 1.175 for discussion of the text) that Romans with property were already in 111 BC familiar with means of paying for real property *other than* by means of ready money (*praesens pecunia*), and they probably had been for some considerable time. The *aerarium* dealt in cash whenever possible (or it required a special kind of security known as a *praes*: see Berger 1953: s.v.), and here the law insisted on it.

¹⁸ Crawford (1969): nos. 259 (an unspecified number of gold bars, from a war period in Spain) and 357 (similar, from civil-war Italy). Nos. 193 and 331 scarcely help. Nonetheless Verboven (2003: 63) cites Crawford no. 357 as evidence for his assertion that (in the late Republic) ‘large payments’ were made ‘in gold bullion’ (p. 62). The original reports on which such lists are partly based are admittedly sometimes defective.

¹⁹ Andreau (2008).

²⁰ Many assets were removed before and after the eruption, but ‘an enormous cross-section of money in personal hands has remained’ (Duncan-Jones 2003: 162).

²¹ In Cicero, *Att.* 13.45.3 *argentum* may well be plate. The gold with which Clodia was supposed to have bribed slaves to carry out a murder (*Cael.* 30–31, 51–2) may well have been in the form of *ornamenta* (52), as Austin (1960) supposed. Verboven (2003: 62) is tendentious. Gold gave the air of luxury and corruption: hence Antony weighed it out to his followers in 44 BC, Cicero says (*Phil.* 3.10), once again nothing to do with regular commerce. Lucilius 428–429 Marx is irrelevant. The gold Cicero refers to cryptically in several letters of May 45 BC (*Att.* 12.6.1, etc.) may have been bullion, plate, or coin.

this has nothing to do with ordinary business life.²² In imperial times, once again, we sometimes find gold bullion in private hands (e.g. Ulpian in *Dig.* 12.1.11.pr.),²³ but it is implicitly *not* counted as *pecunia*, and seldom used in business or property transactions, as far as we know.²⁴ There was an important exception, which does not invalidate the general conclusion: bullion sometimes had to be used to buy things from across the frontier, the eastern frontier at least: hence it was sometimes on sale at Coptos and Alexandria.²⁵

Proof positive that the traditional understanding of Roman money is mistaken appears, I think, in 49 BC when the credit system tottered under the impact of civil war. Nervous creditors began to seek payment *even* of the principal 'in silver', i.e. silver coin, and one part of Caesar's reaction was to 'forbid anyone to hold more than 15,000 drachmas in silver or gold' (Dio 41.38.1),²⁶ which would have meant a Maoist revolution—most emphatically not Caesar's purpose—if gold and silver coins had really been the only form of money. Quite obviously, his purpose was that the rich should lend, which would leave them with negotiable *nomina*.

Further: Parker's catalogue lists about 674, mostly commercial, shipwrecks of the period 200 BC to AD 200, and in about 150 cases we have extensive information about the ship's contents (though never, presumably, information of guaranteed completeness). Not one of these wrecks, unlike some late-antique ones, has ever so far produced 'hoards' of coins large enough to suggest that big cargoes were paid for in cash.²⁷

To complete this overture: *amicae* require gifts, so many gifts, and Ovid, discussing this disagreeable fact, reveals incidentally that it was no use saying that you happened to be out of cash—a 'littera', that is to say *litterae*, a letter, was enough (*Ars Am.* 1.426).²⁸ You could pay with *litterae* in Augustan Rome, if of course your credit was good. Which is interesting above all because it is likely to refer to goods sold for hundreds not millions of sesterces.

²² This is a complete review of the texts that are supposed to support the conventional view of this matter. For Cicero's attempt to prevent the export of gold and silver from Puteoli in 63 BC, see below, p. 245.

²³ 'Rogasti me ut tibi pecuniam crederem; ego cum non haberem lancem tibi dedi vel massam auri, ut eam venderes et nummis utereris', 'you asked me to lend you some money; since I did not have a pair of scales, I gave you either a bar of gold so that you could sell it and use the cash'.

²⁴ Rathbone (1996a: 319) says that 'any lump of gold or silver ... could be used for exchange', but gives no examples.

²⁵ See Rathbone (2003: 223). But it seems to me that *Periplous Maris Erythraei* 24 and 28 do not refer to bullion in the ordinary sense but to manufactures.

²⁶ It is curious that a scholar as precise as Andreau should have passed over this provision in his account of the crisis of 49 BC (Andreau 1999: 103–5). Neither he nor any other scholar I know of has suggested that Dio was mistaken.

²⁷ See Parker (1992: 30), who lists three counter-examples from the fourth century; two intermediate cases date from after AD 290 (*ibid.*). All of this may reasonably be seen as a consequence of a change in the monetary system. [[And see the Addendum.]]

²⁸ Mrozek (1985: 311 n. 8) noticed the relevance of this before I did.

By now the adherents of the traditional view should be worried, but their inner defences have not been properly breached. |

THE FINANCIAL SECTION

Money, to adopt the standard definition, is anything that serves as a means of making a payment (whether in exchange or otherwise), a store of value, or a unit of account.²⁹ Let us look more closely at the work of those who have studied how money has historically behaved and now behaves.³⁰ Text-books of macroeconomics expect money to perform all of the above functions, but since economists are interested above all in markets, they tend to emphasize the exchange function:³¹ thus ‘the distinguishing feature of money among all assets... is its role as the medium of exchange’,³² and money is ‘the stock of assets that can be readily used to make transactions’.³³ It is ‘anything that serves as a commonly accepted medium of exchange or means of payment’.³⁴ Roman units of account are certainly of interest (they referred to *sesterces* much more often than they passed them from hand to hand), but they will not concern us directly. We can agree, I think, not to treat things that were regarded as stores of value as money unless they could also be used for making payments (so jewellery will not be treated as part of the money supply).³⁵

In a modern economy the money supply is not limited to the volume of specie issued by the central bank, or to that amount plus the obligations (bonds, notes) issued by the government: matters are more complicated than that, for there is a multiplier effect, created by loans.³⁶ In other words, a modern nation is normally well supplied with what is sometimes referred to as IOU money,³⁷ loans extended by banks or bank-like institutions. As soon as

²⁹ On the latter function see Kessler and Temin (2008).

³⁰ According to a revealing remark by von Reden (2002: 142), ‘modern economic and monetary theory is now regarded by most scholars as unhelpful for understanding money in the ancient world’ (however, the attached footnote lists only scholars who disagree). Not all ancient historians are so cloistered; for a more balanced view see Andreau (scarcely a ‘modernizer’) (1994c: 177–9). We shall continue to be vigilant for anachronisms.

³¹ But Hicks, for example, was very interested in ‘partial money’ (1967: 2).

³² Fischer et al. (1988: 141).

³³ Mankiw (2003: 76).

³⁴ Samuelson and Nordhaus (1998: 158).

³⁵ It should be noticed that in the US at least it has become much more difficult since the early 1990s to distinguish between monetary and non-monetary assets, and near-money has become more liquid, because of such practices as writing cheques against mutual-fund accounts (see Mankiw 2003: 496–7). In a sense, this change is paradoxically making the current system more like the more sophisticated part of the Roman system.

³⁶ Technically the money multiplier in a modern economy is the ratio of the money created by banks to the volume of their reserves (Samuelson and Nordhaus 1998: 172). It is ‘a ratio that relates the change in the money supply to a given change in the monetary base’ (Mishkin 1986: 6–8).

³⁷ Fischer et al. (1988: 143).

a partial-reserve or 'fractional reserve' banking system came into being,³⁸ the money supply began to exceed the quantity of currency.

This does not of course mean that a monetary system has become 'modern'. By 1776, bank money in Britain already exceeded metallic money. At that time, however—and here the high Roman Empire may possibly have been similar—'coins and tokens remained the only currency handled by the vast majority of the population'.³⁹ |

What is it, though, that determines that some lending adds to the money supply while some does not? One still current macroeconomics text-book even says, eccentrically, that credit cannot be money at all. We are told that 'when you lend a friend \$50, the amount of *credit* in the economy is increased by \$50. However, the amount of *money* is not altered one iota...'.⁴⁰ And on the authors' terms, which are presentist not historical, they might be right—for they have defined money in a relatively restricted fashion,⁴¹ so that even M-3, their most inclusive concept of money, consists of currency and deposits in banks plus money-market mutual fund shares and what are called repurchase agreements. But there is a fallacy here, for some loans create the substance with which you can buy things without diminishing anyone's assets. It is the latter phrase that counts, obviously, since all loans by definition increase the *borrower's* capacity to pay.

'Credit money is just a part of a whole credit structure that extends outside money; it is closely interwoven with a whole system of debts and credits, of claims and obligations, some of which are money, some of which are not, and some of which are on the edge of being money'—so Hicks once wrote,⁴² and with appropriate caution this can be applied to the Roman economy too. Which lenders, then, can carry the loans they have made as assets? To take a Roman example, the *coactor argentarius* mentioned by the jurist Scaevola who 'paene totam fortunam in nominibus [habebat]' ('held nearly his entire fortune in IOUs') (*Dig.* 40.7.40.8): what entitled him to count these *nomina* as part of his *fortuna*? The answer is reasonably clear and once again is set out in the economics text-books: it is essentially the legal—and we should add, the social—capacity of the lender to recover from the debtor (and that helps to explain why the \$50 I lent to my friend did not add to the money supply—if he does not repay me I am not going to sue him, and indeed it would be

³⁸ Ibid. 146–7, 153; Mankiw (2003: 484–5).

³⁹ G. Davies (1994: 238). Braudel quotes estimates of still higher ratios of paper to metallic money in the eighteenth century; and 'sages at the time said that [paper money] should not be three or more times the value of the mass of metal money': Braudel ([1979]1982: 113, with references).

⁴⁰ Ritter and Silber (1989: 319).

⁴¹ Ibid. 6. According to other definitions (e.g. Fischer et al. 1988: 154), M-3 includes other forms of near-money such as liquid treasury securities and even commercial 'paper'. M-3 has now (March 2006) been abolished.

⁴² Hicks (1967: 157–8).

disproportionately expensive to do so).⁴³ Now, no one will need convincing that Roman law provided creditors with robust means of protecting themselves,⁴⁴ which were of course much stronger if a loan was secured.⁴⁵

Yet this account is excessively simple, in two respects. Firstly, in a modern economy, loans made by corporations or individuals are not normally considered to add to the money supply, even when they are legally recoverable.⁴⁶ And that makes sense, since a modern banking system controls, or at least attempts to control, the quantity of money, and furthermore such loans are not used as a medium of exchange. In the Roman economy, on the other hand, with no central bank, what determines whether something is money or not has to be the primary characteristic (referred to at the beginning of this section)—whether it is readily used as a means of making payments.

Secondly, the history of debt in early modern England suggests that the *moral* obligation of the debtor, combined with his need to maintain his creditworthiness in the eyes of the community, will also have carried weight.⁴⁷ The Roman debtor's greatest danger | continued to be *infamia* (Papinian in *Dig.* 46.3.97). *Fides* was not of course to be treated lightly.⁴⁸

Economists are not surprisingly in a certain amount of disaccord about the nature of money. And current debates should have some interest for Roman historians. The mainstream view is that central banks, or central banks plus individual banks, create money, which is thus 'exogenous' to the economic system.⁴⁹ Others hold that it is 'endogenous', meaning that it is entirely created, by lenders of all kinds, 'in response to the needs of the economic system'.⁵⁰ So one of the proponents of a view of this kind writes that 'modern money is bank money or [bank] credit issued for the purpose of production'.⁵¹ The traditional view is that Roman money was official coinage, hence all in a

⁴³ As von Mises succinctly wrote, credit money 'is that sort of money which constitutes a claim against any physical or legal person' (1953: 61). Cf. Temin (2001: 174 end).

⁴⁴ Well, hardly anyone: von Freyberg (1989: 93) actually claims that one of the reasons why Roman lenders could not, in his view, increase the money supply was 'the lack of legal and technical standardization'. The sanctions on insolvent debtors in the Republican period are described by Frederiksen (1966: 128–30). For the Empire, briefly, Crook (1967: 175–8). Lo Cascio (1981) seems to me to have confused two issues when he wrote that credit-money can be left out of a discussion of the Roman money supply because there were 'no measures aimed at influencing the economic function of banks of deposit and credit' (p. 76 n. 3); there only had to be effective laws about debt, which there were.

⁴⁵ For a borrower's differential treatment of secured and unsecured debts see e.g. Cicero, *Att.* 16.6.3.

⁴⁶ Mankiw (2003: 485): 'only banks have the legal authority to create assets... that are part of the money supply.'

⁴⁷ Muldrew (1998: 121–72). *De officiis* was of course a favourite text.

⁴⁸ And it was by *consuetudo* not statute that you could recover a bank deposit from the banker's *socius*: *Rhet. Ad Herennium* 1.13.19. See further Ioannatou (2004).

⁴⁹ Rochon (2003: 115–41) can lead one into this debate.

⁵⁰ *Ibid.* 126.

⁵¹ *Ibid.* 116.

sense exogenous; I argue that we should include many (not all) recoverable loans, and hence a lot of endogenous money.

When economists define credit-money, they sometimes, admittedly, make matters more complicated than I have made them in this account, but that is because they quite naturally have recent and current conditions in mind, and not the world that existed before the invention of clearing banks. 'A credit money system presupposes the existence of the institutions of private property, contracts, enforcement, and clearing,' says one.⁵² But historically speaking, as we shall see, the last of these four elements is a wonderful convenience but not in fact a necessity.

In the Roman scheme of things what you paid with was commonly *pecunia*, though other words such as *nummi* were also standard. It is therefore quite important that *pecunia* could have a very wide meaning. Naturally one ought not to press individual texts too hard. Gaius, for instance, remarks that 'the term *pecunia* in this law [Sulla's *Lex Cornelia de sponsu*, if that was its real name] means everything; and so if we stipulate for wine or wheat or a farm or a slave, this law must be observed'.⁵³ But in texts such as this, it is hard to be sure a priori whether the author is arguing in harmony with or against the general understanding of the term *pecunia*, which is what matters most. In a passage already quoted, Ulpian (*Dig.* 12.1.11.pr.) seems to reveal that plate and bullion are not *pecunia* in the ordinary sense of the term, but Hermogenianus' definition, quoted as an epigraph above, included them. In another passage Ulpian claims that 'the term *pecunia* includes not only coinage but every kind of money whatsoever, that is, every substance (*omnia corpora*); for no one doubts that substances are also included in the definition of money' (*Dig.* 50.16.178).⁵⁴ Clearly it is not Ulpian's intention here to deny that documents could represent money, but simply to assert that such things as wine and wheat *could* indeed count.

The important point for us in any case is that *pecunia* could include loans. And in fact Cicero in a published speech simply takes it for granted that *nomina* were a form of *pecunia*, that is to say that credit, at least in a certain form, was money (*II Verr.* 5.17),⁵⁵ though in this case rather illiquid money (Verres' victim had an interest in asserting that he could not pay because his assets were mainly in *nomina*). For Tacitus, it is reasonably clear that *pecunia* included credit.⁵⁶ Hermogenianus ought really to have said that *pecunia could*

⁵² Moore (1988: 20).

⁵³ *Inst.* 3.124. The law limited the amount of *credita pecunia* that an individual might 'sponsor' to the same lender for the same borrower in any given year.

⁵⁴ See also Ulpian in *Dig.* 27.9.5.9.

⁵⁵ Verres' victim Apollonius protested '*pecuniam sibi esse in nominibus, numeratam in praesentia non habere*', 'that his money was in names, that he had no coin money available'.

⁵⁶ *Ann.* 6.16: '*magna vis accusatorum in eos inrupit qui pecunias faenore auctitabant*', 'a great mass of accusers attacked those who were in the habit of increasing their assets by money-lending'.

include objects and legal claims, on certain conditions; but he was certainly not expressing an extreme or eccentric opinion—Justinian's lawyers chose just these two definitions of money, Ulpian's and Hermogenianus', and no others.

χρήματα was an equally broad concept, notoriously capable of meaning either 'money' or 'goods'.⁵⁷ Aristotle defines the term as 'everything of which the value is measured by currency' (*nomismati*) (EN 4.1.119b26–27), and this usage continued into Roman times (e.g. Dio Chrysostom 13.20).⁵⁸ None of this means that what was referred to as *pecunia* or χρήματα necessarily satisfies a modern definition of money, but it makes it less likely that Roman money was made up exclusively of coinage.

THE USE OF CREDIT

It is often intriguing to compare the financial world of Rome to that of an early modern economy.⁵⁹ Take the case of England between the late sixteenth century and the early eighteenth, as described by Craig Muldrew in *The Economy of Obligation: The Culture of Credit and Social Relations in Early Modern England*. (His sources are of course vastly better than ours.) Credit and debt were fantastically pervasive: 'every household in the country,' our eminently sober author writes, 'from those of paupers to the royal household, was to some degree enmeshed within the increasingly complicated webs of credit and obligation ...' 'Various instruments of credit were in use by the late sixteenth century ... but most credit extended for sales or services seems to have been remarkably informal.'⁶⁰ Merchants, shopkeepers, peerage, gentry were all heavily involved.⁶¹ Muldrew goes on to argue for the very great financial importance of all this credit in relation to the rather limited supply of coinage money.⁶² None of this proves anything about the Roman Empire; but at least we can see how a pre-industrial economy in reasonably good shape could in effect vastly increase its money supply without a central bank or a clearing house for financial obligations.

Credit is the centre of this inquiry, but to write the history of credit in the Roman Empire would be a large task indeed.⁶³ Such a history might start with

⁵⁷ For recent comment see Seaford (2004: 187–8).

⁵⁸ The history of this term offered by Caccamo Caltabiano and Radici Colace (1992: 185–6) is a fantasy.

⁵⁹ Temin (2004) performed this exercise with respect to early modern Holland, Britain, and France.

⁶⁰ Muldrew (1998: 95, 96).

⁶¹ See Muldrew (1998: 96–8 and *passim*) for vivid detail. Munro (2003: 505–62) describes and explains the evolution of credit instruments in Britain.

⁶² Muldrew (1998: 98–100).

⁶³ Temin (2004) has now shown the crucial economic importance of the Roman credit market.

a typology, which would resemble the list of different kinds of debt mentioned in the Ephesian Debt Law of 85 BC (SIG³ 742),⁶⁴ according to which creditors forgave, as it seems, virtually all types of debt, except that as far as bankers were concerned there was merely to be a moratorium on their loans (and also on the repayment of their deposits).⁶⁵ Cancelled debts included (lines 50–52) maritime loans, *cheirographa* (unsecured loans, presumably), *parathekai* (loans secured by portable objects), first and second mortgages, and, most interestingly of all, | debts concerning sales (*kat'onas*) that were in the form of a *homologia* (a legal document acknowledging the receipt of a loan).⁶⁶

The main question, however—impossible to answer except in order-of-magnitude terms (see the next section)—is the *extent* of credit-money,⁶⁷ and so it seems best to proceed by examining various different social milieux one by one, even though it will soon become evident that there was more vertical integration in the credit market than has sometimes been realized. I will distinguish the very well-to-do, the decurion class, and the poor but solvent masses, without pretending that these are clear labels.⁶⁸ All the testimony is fairly well known, but there are some significant details to clarify. At the end of this section I shall ask how much evidence there is that people actually made payments by means of documents.

Before we even come to private lenders, it will be remembered that cities too sometimes made loans—no reason to think this was at all new at the time of our earliest evidence, which appears to be the *Lex Irnitana* (ch. 79).⁶⁹ We never get any clear idea of scale, except that Pliny thought the matter worth referring to Trajan (*Ep.* 10.54–5).⁷⁰ Foundations also seem to have lent their capital,⁷¹ as did temples, at least in Greek cities.⁷²

⁶⁴ = IGSK XI (*Die Inschriften von Ephesos* la) no. 8.

⁶⁵ The first historically attested bank moratorium, as Bogaert (1968: 252) points out.

⁶⁶ For this meaning of the word see *ibid.* 251 n. 129. In Italy such a law would also have had to take into account the very widespread practice by which *coactores* gave credit to purchasers at auction sales (see Andreau 1999: 38–9 etc.). Finley (1951: 269) says that this text ‘need not be interpreted’ as a reference to sale on credit (which, however, was widespread in Greek practice: Pringsheim 1950: 266), but does not reveal how he thinks it ought to be interpreted. The best translation of these lines seems to be the one by Asheri (1969: 117) (into Italian).

⁶⁷ I shall not consider directly the question, important in other contexts, whether there was much lending for productive investment rather than consumption. For some recent comments see Andreau (1999: 147–8), Camodeca (2003: 81, 83). My purpose here is merely to discuss the money supply.

⁶⁸ The possible relevance of other fundamental distinctions, urban/rural and Graeco-Roman/‘peripheral’, hardly needs emphasizing.

⁶⁹ Tablet VIII C, line 48 (González 1986: 174).

⁷⁰ Howgego (1992: 14 n. 124) has some references to this phenomenon.

⁷¹ This is argued by Duncan-Jones (1974: 133) on the grounds that this was the only way to obtain attested rates of 12 per cent per annum—attested at Bergomum, Opitergium, Ostia, Theveste, and Rome itself—always, however, for small foundations.

⁷² Howgego (1992: 14 n. 125).

But these are probably minor phenomena, whereas debt was in fact the life-blood of the Roman economy, at all levels. The normality of *nomina* (i.e. outstanding loans) among the assets of the *rentier* class has already been commented on: *nomina* were a completely standard part of the lives of people of property, as well as being an everyday fact of life for great numbers of others.⁷³ Nothing could be further from the truth than a scholar's contention that it was only *under extraordinary circumstances* that the creation of credit-money took place.⁷⁴ In a modern economy the standard cautious investment for the well-to-do is, or at least used to be, government bonds; in the virtual absence of bonds, governmental or otherwise,⁷⁵ the Roman well-to-do relied heavily on *nomina*. Describing the credit crisis of AD 33, Tacitus (*Ann.* 6.16.3) remarks that *all* senators were more extensively involved in money-lending than the law allowed ('neque enim quisquam tali culpa vacuus').⁷⁶ We know that by the late Republic virtually every aristocrat whose affairs are attested in the sources lent money, and it was normal for the less illustrious senators to do so too.⁷⁷ Augustus was evidently regarded as something of a stickler for having tried to keep the *equites* up to old-fashioned aristocratic standards by punishing those among them who borrowed money at lower rates of interest in order to lend it at higher ones (Suet. 39).

There is no reason to think that this pattern changed much, if at all. Seneca was simply the most conspicuous of those who lent to the provincials under the early emperors.⁷⁸ Since Augustan times, at least, one assumed that a Roman of means divided his or her investments between land and *faenus*: 'dives agris, dives positus in faenore nummis', 'wealthy in land, wealthy in money lent out at interest' (Horace, *A.P.* 421). This is too well known to need exhaustive documentation.⁷⁹ Tacitus describes the assets of the Romans who had benefited from the largesse of Nero, people of various social ranks no

⁷³ Cf. *ibid.* 13–15, Duncan-Jones (1994: 24), Tchernia (2003: 134). For money-lending by *equites* and *publicani* under the Republic see Brunt (1988: 169).

⁷⁴ Von Freyberg (1989: 93). He should not incidentally have cited Frederiksen (1966) on this point, since the latter says practically the opposite: 'there is no reason to think that the complex monetary deals in Cicero's letters were at all unusual' (p. 131).

⁷⁵ Though cities did sometimes borrow: Migeotte (1984: 359), Andreau (1999: 124–5).

⁷⁶ The law had of course been put through by Caesar in special circumstances, and according to Tacitus had long been a dead letter.

⁷⁷ Shatzman (1975: 75–9) summarized the evidence effectively.

⁷⁸ Tacitus, *Ann.* 13.42. The famous loans to the Britons amounting to 40 million (nice round sum): Cassius Dio 62.2.1. Vespasian's father T. Flavius Sabinus is another well-known example (he made loans to the Helvetii: Suetonius 1).

⁷⁹ Besides the references in the text see also Petronius, *Sat.* 37, 117.8; Martial 3.31, 4.37 (and see further Duncan-Jones 1974: 21 n. 4; Andreau 2000: 770). For land and loans as the two forms of investment, this time in Bithynia, see Pliny, *Ep.* 10.54.1. D'Arms (1981: 105) demonstrated that in such locutions as *agri et nomina* it is quite wrong to think of the loans as being primarily agricultural (though that would not affect my central argument). [[The new text of Galen's *περὶ ἀλμπίας* shows, sect. 4, that his major assets included *sumbolaia* (Boudon-Millot 2007: 87), which were presumably IOUs.]]

doubt, as consisting of *agri* and *faenus* (*Hist.* 1.20.1). ‘Sum quidem prope totus in praediis, aliquid tamen faenero, nec molestum erit mutuari’ says Pliny the Younger (*Ep.* 3.19.8).⁸⁰ Well-to-do Greeks may have been less inhibited than senatorial Romans: according to Dio Chrysostom (7.104), the rich support themselves by means of tenements, leasing slaves and by ships, as well as by usury, but in any case they engage in noteworthy quantities of money-lending.⁸¹ Looking back, a law of Constantine remarked with understandable hyperbole that the *veteres*, i.e. those of much earlier times, had entrusted ‘the whole strength of their patrimonies’ to lending money—something that was clearly no longer advisable (*C.J.* 5.37.22.5a).⁸² Conversely the rich also borrowed heavily, especially but not only in the late Republic; once again the phenomenon is too well known in outline to need documentation.⁸³

Some even of those scholars who know how economists define money continue to criticize Mrozek for failing to make a distinction between *nomina* and money.⁸⁴ But it is the critics who are wrong, for they take no account of the ways in which a system with partial-reserve banking and an extensive system of legally recoverable loans can bring into existence assets that can be used for making payments.

Capital markets certainly depended much more on personal ties than modern ones do (usually you borrowed from your acquaintances, not institutions)⁸⁵—as indeed was inevitable in any pre-print or early-print culture in which economic information was scarce and unreliable. (Early industrial England was similar in this respect.)⁸⁶ How could you judge a stranger’s creditworthiness? But Seneca, who knew what he was talking about where high finance was concerned, assumes as a matter of course (*Ep.* 119.1) that anyone who wants to go into commerce will borrow, and will do so through people he calls | *intercessores* and/or *proxenetae*, financial agents (it is a sign of the serious limitations of our sources that we have little information about how such people operated).⁸⁷ And loans could cross social boundaries: Cn. Sentius Saturninus, for example, *cos.ord.* AD 41, lent money to the landowner and money-lender L. Cominius Primus of Herculaneum.⁸⁸

⁸⁰ ‘I am almost entirely in land, but I lend out some money at interest, and it will not be difficult to borrow.’ These words show that ‘no stigma attached to money-lending’ for senators of Pliny’s time (Duncan-Jones 1974: 21).

⁸¹ Compare Ps.-Plutarch, *De lib.educ.* 7 = *Mor.* 4b; Pleket (1984: 14–15). One could encounter such combinations at Ostia and Puteoli; cf. D’Arms (1981: 102).

⁸² The date of this comment was AD 329. Cf. Carrié (2003b: 277).

⁸³ Aristocrats as debtors ‘to an extraordinary degree’: Duncan-Jones (1994: 24).

⁸⁴ Verboven (2002: 116 n. 1); similarly Howgego (1995: e.g. 123).

⁸⁵ For a recent discussion of how this worked in Cicero’s time, see Andreau (2002: 122–8).

⁸⁶ Pomeranz (2000: 179–80).

⁸⁷ See *Dig.* 50.14, however (where the translator in A. Watson 1985 bizarrely takes *proxenetae* to mean slave-dealers). Columella simply assumes that interest will be among the expenses of a vineyard owner (3.3.9).

⁸⁸ Camodeca (2003: 95).

We inevitably come to the problem of banks.⁸⁹ It will not be necessary to spend time discussing who counts as a banker in the Roman world, for Andreau has dealt satisfactorily with this complex matter and we are merely concerned with who made loans, with what, and to whom. The orthodox view is that Roman bankers seldom if ever had many partners, if any, that they possessed little capital, and that they had little to do with the upper social elite, the wealthiest five or ten thousand let us say.

This orthodoxy probably needs to be modified, if not rejected, in every respect. First, however, it is worth repeating that Roman bankers did indeed lend—much of the extensive evidence was gathered by Andreau.⁹⁰ It can also be demonstrated, in case it needs to be, that classical banks practised fractional reserve banking—for otherwise there would have been no need in the crisis of 85 BC to give the bankers of Ephesus ten years to pay back their depositors.⁹¹ We have no evidence as to how large their reserves were normally: according to De Roover, medieval bankers typically maintained a reserve ratio as high as 29–30 per cent.⁹²

It has recently been asserted that ‘any interest gained on [bank] clients’ deposits had to be credited to the account of the client’,⁹³ with the implication that it would have been pointless, most of the time, for them to loan such funds. But that is extremely misleading: the writer in question failed to notice that what was technically known as a *depositum* was only one kind of bank-deposit, generally non-interest-bearing, whereas if you wanted interest, the form of your bank-deposit would be a loan (there are exceptions and complications that need not concern us in this context).⁹⁴ Bankers were also able to make payments at a distance,⁹⁵ in other words without the direct use of coins, which meant that other people (bankers too, presumably) afforded them credit. And though it used to be said that bankers did not in any case make *maritime* loans, presumably because of the high risks,⁹⁶ more recently we have learned from a large-scale contract analysed by Lionel Casson that even this limitation could be partly circumvented,⁹⁷ and presumably it often was.⁹⁸ |

⁸⁹ Andreau above all has taught us (1987a) that Roman banking institutions varied by time and place. These differences are not brought out here, but in a longer account they would need to be.

⁹⁰ Ibid. 550–51, 583–8. But there is considerably more: for Ephesus in 85 BC, for instance, see SIG³ 742, lines 55–61.

⁹¹ Ibid. lines 60–61.

⁹² De Roover (1948: 318).

⁹³ Von Reden (2002: 145), apparently misled by Bürge (1989: 322).

⁹⁴ See Andreau (1999: 42).

⁹⁵ See e.g. Cicero, *Fam.* 2.17.4. In Cicero, *II Verr.* 1.102 it is implicit that the banker P. Tadius at Athens can make payments at Rome. *Att.* 7.18.4 shows that in ordinary circumstances it was possible to make payments from Italy to Greece.

⁹⁶ Andreau (1987a: 603–4); cf. Bogaert (1968: 355).

⁹⁷ A banker (a Roman citizen based in the village/modest town of Theadelphia) was involved as an intermediary: see the revised text of *P. Vindob. Gr.* G 19792 in Biscardi (1974: 211–14), and in Casson (1986b: 11–17) (= *SB XIV.11850*) (AD 149). The archive of the Sulpicii, however, contains no maritime loans (Camodeca 2003: 88).

⁹⁸ We do not know who provided the very large maritime loan in the ‘Muziris’ papyrus (*P. Vindob.* G 40822 = *SB XVIII.13167*). On maritime loans more generally see Andreau (1999: 55–6).

The Roman banking system operated in a largely unregulated fashion,⁹⁹ and many banks apparently consisted of a single principal, usually—one must suppose—with quite limited capital. But our increased knowledge of the operations of the bank of the Sulpicii at Puteoli has led to the conclusion that it had between six and fifteen principal members, or even more, a ‘respectable scale’ indeed for a pre-industrial economy (it is not of course suggested that Puteoli was a typical Roman town).¹⁰⁰

As far as the elite are concerned, they obviously used banks less than is normally the case in a modern economy. But the current view is seriously misleading. As early as 162 BC, Scipio Aemilianus had a notable sum (perhaps much in excess of 1.2 million HS) on deposit with a banker (*trapezites*) (Polyb. 31.27.6),¹⁰¹ and though this may surprise some scholars, it did not seem at all remarkable to Polybius. There is more, for when on a particular occasion the banker made payments on Aemilianus’ behalf to two other leading Romans (Ti. Sempronius Gracchus the Elder and P. Scipio Nasica Corculum), ‘he made each of them a *diagraphe* for twenty-five talents’ (31.27.7). Liddell and Scott invent a meaning: ‘crossing out, cancelling of a debt’—‘hence’, they say more correctly, ‘payment’.¹⁰² And obviously it would have made no sense for the banker to *cancel a debt* for Gracchus and Nasica—what he did for them was to make them payments, on ‘paper’ I suggest, into *their* accounts.¹⁰³ If that sounds a little unlike the world of Cicero,¹⁰⁴ there are several possible explanations: it may be, for example, that professional bankers actually lost some of their importance later with the spread of the system of easily transferred debts, in other words the system of *delegatio*.

⁹⁹ There were, however, certain rules that an economist would have to approve of, such as the banker’s obligation to produce his *rationes* in court, if required (Ulpian in *Dig.* 2.13.4), which was an additional protection for the depositor (see Andreau 1987a: 618 for limitations on this right).

¹⁰⁰ Verboven (2000: 164 end); see also Camodeca (2003: 78–9). In favour of calling the Sulpicii firm a ‘bank’ see *ibid.* 74.

¹⁰¹ See Walbank’s commentary (1957–79: 3.508) for a significant improvement in the text. This was the well-known occasion when Scipio paid the balance on his two aunts’ dowries in advance. But when Walbank says (note on 27.7) that ‘Scipio had deposited the money with the banker’, he may imply that Scipio would not normally have had money, or at least a sum of this size, on deposit at a bank, which there is no reason to believe at all. This was a routine transaction, in a sense, between aristocrats who were well known to each other.

¹⁰² *διαγράφειν* can of course mean ‘to draw a line through’, ‘cancel’, but for *διαγραφή* as ‘(an order of) payment’ in financial contexts see the references given by Liddell and Scott themselves and many others, e.g. *P.Col.* IV.89, *P.Dublin* 10, *P.Dryton* 31. Drewes (1970) maintained that the *diagraphe* was not a ‘cashless’ payment, as F. Preisigke thought, but this runs counter to the natural reading of the documents.

¹⁰³ Mauersberger (1956:471) has this right: ‘Zahlungsleistung durch Anweisung’. So too Barlow (1978: 78). The fullest discussion is Bogaert’s (1968: 50–59): the relevant meaning is a *notification de crédit* (59) (Bogaert thinks that Polybius’ use of the word *komizesthai* means that the creditors were paid in cash, but the term can be used quite abstractly).

¹⁰⁴ Cf. Andreau (1987a: 661).

It is often claimed that bankers did not in any case have much to do with the upper elite,¹⁰⁵ but the evidence, such as it is, suggests that *some* of them at least certainly did: the credit crisis of AD 33 concerned initially and above all senators, and when Tiberius decided to rescue the credit market, he did so by providing 100 million sesterces of loans—not directly, however, but through *mensae* (Tacitus, *Ann.* 6.17.3), which are not, as many interpreters have claimed, ‘specially established’ or ‘temporary’ banks (nothing of that in the sources), but just ‘banks’. It is entirely unsurprising, therefore, that under Claudius, as we now know, slaves of the emperor—for entirely different reasons—lent five- and even six-figure sums to the bank of the Sulpicii.¹⁰⁶ When Herodes Atticus distributed the five *minai* which he had agreed to pay to each citizen of Athens in virtue of his father’s will, he | did so through bankers, who were in possession of IOUs (*xumbolaia*) that the citizens’ fathers and grandfathers had not paid off to Herodes’ family (they were told to deduct these sums from Herodes’ gift).¹⁰⁷

It remains most unclear how large this banking sector really was—not even a useful guess is possible. The geographical distribution of bankers, though it is of course all urban (as it has always been!), was really quite wide.¹⁰⁸ The consensus view, at least in some versions, finds itself in the awkward position of denying that most Roman banking added to the money supply, while asserting that the banks of Graeco-Roman Egypt did exactly that—for that is the conclusion of some at least of the scholars who have studied the operations of the banks in Egypt.¹⁰⁹ ‘Payments received from lessees and from larger-scale buyers of produce such as the *oinopolai* sometimes came in cash and sometimes through a credit transfer through a local bank’—that was in the Arsinoite nome in the mid-third century AD.¹¹⁰ It might be presumed that this was also the case in most if not all provinces with an inheritance of Hellenistic business practices, and the wide scatter of bankers throughout Italy supports the notion that it too should be included.

But let us return to credit more generally. The comfortably-off—the members of the decurion class¹¹¹ and their economic equivalents among the freedmen—were they too part of the debt economy? If they lived in commercial towns like Puteoli (Ostia, Aquileia, and so on—we are speaking here of at least twenty or thirty places all across the Empire), the answer is plainly yes.¹¹²

¹⁰⁵ So e.g. Jongman (2003: 196).

¹⁰⁶ See Camodeca (2003: 87) for references.

¹⁰⁷ Philostratus, *Vit.soph.* 2.1.549, with Bogaert (1968: 84–5).

¹⁰⁸ Andreau (1987a: 325) had epigraphical documentation of 19 towns in the western provinces showing that *argentarii*, *nummularii*, *coactores argentarii*, or *coactores* were active there; for the eastern provinces see Bogaert (1968: esp. 409–10, and 1995: 133–73).

¹⁰⁹ Von Reden (2002: 147), relying on Bagnall and Bogaert (1975) and Bogaert (1983a).

¹¹⁰ Rathbone (1991: 324).

¹¹¹ In using this label, I have in mind the decurion class as it was before the evasion of office became a large-scale phenomenon.

¹¹² It should be remembered how little we know about the financial lives of such places. Even Alexandria is largely a mystery in this respect: Rowlandson (2001: 146).

I take it that all the mechanisms visible in the Murécine documents were employed in all such places, if not on the same scale. These documents are not about small change: the usual scale of a Murécine loan is in the range 10,000–30,000 sesterces. Note that very often the security for such loans was provided by other documents: the commonest kind of security was a *fideiussio*, which therefore had to have a market-value just like more concrete forms of security—so here we have negotiable ‘paper’ once again. The chief expert on the Murécine texts, Camodeca, has come round to the view that the house of the Sulpicii ‘played a part in the productive and commercial activities of Puteoli’.¹¹³ Be it noted, however, that the argument here is not that credit had the same role in the Roman economy as it did in, say, industrializing countries in the nineteenth century, but simply that it was pervasive and institutionalized and added enormously to the money supply.¹¹⁴

The complexity and sophistication of late-republican and high-imperial finance has been ignored by the Finley school, no doubt partly for the innocent reason that the sources often allude to procedures which they do not explain. And there are many real obscurities, for instance about the full range of activities of the *coactores* (auction financiers).¹¹⁵ We have | seen signs of an extensive credit system in the provinces, but how easy was it, really, for a Spanish or Macedonian estate-owner to borrow? And how much were non-cash payments the rule among, say, the wool-producers of Patavium or the ship-builders of Gades?

Let us turn to more modest people, craftsmen and farmers, those with enough assets to survive, but not much if anything in the way of surplus. Their use of credit is not crucial to my argument, but a brief detour may be worthwhile. The widespread indebtedness of such people is convincingly attested by late-republican writers, as far as Italy is concerned.¹¹⁶ We can probably take it, a fortiori, that the provincials were at least as indebted,¹¹⁷ even though our evidence is very fragmentary. Under the principate, the evidence seems to be even more fragmentary, except in Egypt. There we have documents, and what they suggest to us is something not unlike Muldrew’s early modern England—a world profoundly dependent on credit. This is where Howgego’s review leads us, and there is no need to repeat all his

¹¹³ Camodeca (2003: 80).

¹¹⁴ Finley (1985: 197) insisted that ancient lending was hardly ever aimed at increasing production, but he did not weigh the Roman evidence or consider the real comparanda, such as England on the eve of the Industrial Revolution. My point in any case is simply that credit-money existed, and in ample amounts.

¹¹⁵ Concerning these see Rauh (1989: 52–4).

¹¹⁶ The secondary accounts do not pay enough attention to the rhetorical nature of most of the texts, but popular agitation for *novae tabulae* is reasonably well attested (Caesar, *BC* 3.21; Dio 42.32; cf. Cicero, *Att.* 7.11.1, 10.8.2; Velleius 2.68); see also Cic. *Att.* 7.3.5 etc.

¹¹⁷ See Sallust, *Cat.* 40.1, 41.1, etc. For the contrast between Italian and generally much worse provincial conditions, see my chapter on the late-republican economy in Scheidel et al. 2007 [[Chapter 11 in this book]].

details.¹¹⁸ Rathbone, as is well-known, extrapolated from his analysis of the accounts of a large estate in third-century Egypt as follows: 'the use of credit arrangements [there]...extended the monetisation of the rural economy beyond the limit of the quantity of coin in circulation.'¹¹⁹ But much of the credit referred to here did not add to the money supply,¹²⁰ for the loans in question did not meet the criteria set out in the previous section: though they were legally recoverable, the costs of recovering them would have been prohibitive, hence they could not possibly be used for making payments. The only way in which non-cash payments added to the money-supply in this milieu seems to have been through the kind of bank transaction mentioned earlier.

Were other provinces more or less the same in this respect? This is inevitably a matter for conjecture. One might suppose that provinces with sophisticated Hellenistic or Punic traditions would be quite similar, and the combined effects of Roman taxation and periodic bad harvests, combined with a certain amount of entrepreneurial spirit, may have spread the shadow of debt over most of the Latin provinces in Europe as well, but the appropriate evidentiary base is simply not there.

It can be said, however, that the inhabitants of the Roman Empire had multifarious ways of extending and obtaining credit, and that throughout the period under consideration there is no sign of anything worse than one brief and partly artificial shortage of credit, the well-known crisis of AD 33.¹²¹ In fact nothing we know about Roman interest rates—a subject which admittedly needs some new research—suggests that a shortage of capital was ever one of the economic system's serious weaknesses. The rates available to good-quality borrowers never seem to have been strikingly high.¹²² It is no argument against the model outlined in this section that interest rates varied from place to place | (Gaius in *Dig.* 13.4.3):¹²³ in fact it is just what we ought to expect in a system characterized by social lending and slow long-distance

¹¹⁸ Howgego (1992: 14–15). He appositely alludes to the Tebtunis contracts analysed by Toepel (1973), according to whom 308 out of 928 contracts registered there in AD 45–46 were 'certainly loans or potentially loans' (p. 31).

¹¹⁹ Rathbone (1991: 327). See further Bowman (1986: 113–17).

¹²⁰ See the important discussion by Andreau and Maucourant (1999: 68–71).

¹²¹ This was caused by delation not deflation. It has been suggested to me that the substantial sums lent by Augustus show that he believed that there was a serious shortage of credit, and that is possible, but the loans in question (Suetonius, *Aug.* 41; Dio 55.12.3a) can be explained even better as acts of enlightened self-interest quite natural for an aristocratic Roman used to dealing with *nomina*. It is hard to see how Nero's contribution of 40 million HS to the *aerarium* in 57 (Tac, *Ann.* 13.31.2) can have helped the credit market.

¹²² Cf. Andreau (1999: 94–8) and also Goldsmith (1987: 44).

¹²³ There seems to have been a customary rate of interest in some or all provinces (Ulpian in *Dig.* 26.7.7.10 end; cf. 27.4.3.1). It has been suggested to me that this passage of Gaius refers to *coined* money and attributes to the volume of coined money a crucial role in determining interest rates, but none of this is in the text.

communication. Even if interest rates were by some standards high, it may not have been because the system was incapable of creating enough money.

So credit did add to the money supply. Keynes once asserted that ‘the destruction of the inducement to invest by an excessive liquidity-preference was the outstanding evil [*sic*], the prime impediment to the growth of wealth, in the ancient and medieval worlds’.¹²⁴ In other words, the ‘ancients’ were reluctant to lend.¹²⁵ Such matters are relative, but as far as Rome is concerned, the assertion seems more wrong than right (and the ‘failure’ of the Romans to develop an industrial economy has quite other causes).

We saw earlier [[pp. 225–7]] a fair amount of evidence for non-coinage payments of sums large and not-so-large. *Nomina* were transferable, and by the second century BC, if not earlier, were routinely used as a means of payment for other assets.¹²⁶ This fact is recognized in a simple statement by the jurist Pomponius.¹²⁷ The Latin term for the procedure by which the payer transferred a *nomen* that was owed to him to the seller was *delegatio*.¹²⁸ There was in fact a market in *nomina*.¹²⁹

Clearly it is of considerable importance here, if we are to evaluate the importance of the multiplier effect, to know whether there was commonly serial *delegatio*. In other words, did people commonly make payments by means of *nomina* that had originated not in loans they had made themselves, but in loans made by others which they had accepted as payment?¹³⁰ We do in fact have evidence that by the mid-second century AD (and this may also have been true much earlier) this procedure was entirely standard, for it is referred to in Latin documents from both Egypt (AD 153) and Dacia (AD 162)¹³¹—and

¹²⁴ Keynes (1936: 351); more on the meaning of liquidity-preference, pp. 166–8.

¹²⁵ As to what Keynes meant by liquidity-preference, and whether his views are still viable, there is a large literature, which can be approached through Monvoisin and Pastoret (2003).

¹²⁶ The earliest mention is in Cato, *De agr.* 149.2.

¹²⁷ ‘quod vendidi non aliter fit accipientis quam si aut pretium nobis solutum sit aut satis eo nomine factum vel etiam fidem habuerimus emptori sine ulla satisfactione’, *Dig.* 18.1.19 (‘what I have sold only becomes the property of the purchaser if either the price has been paid to us, or security has been given, or we have given the purchaser credit without security’). Cf. Ulpian in *Dig.* 50.16.187: ‘verbum “exactae pecuniae” non solum ad solutionem referendum est, verum etiam ad delegationem’ (‘the expression “money exacted” refers not only to settlement but also to *delegatio*’).

¹²⁸ ‘The term covers various transactions serving different purposes. The most practical form occurs when a creditor orders his debtor to pay the debt to a third party of whom he himself is a debtor’ (Berger 1953: s.v.). The most relevant chapter of the *Digest* is 46.2, *De novationibus et delegationibus*. The exact meaning of *attributio* in financial contexts need not be debated here. Cf. Rauh (1989: 55: 65–6).

¹²⁹ Cicero, *Att.* 12.31.2, Ulpian in *Dig.* 30.1.44.5 (‘cum chirographa veneunt, nomen venisse videtur’).

¹³⁰ Andreau answers this question negatively when he claims that ‘there was never any circulation of instruments of credit’, Andreau (2000: 778 n. 56).

¹³¹ *P. Fouad I.45* = *FIRA* III no. 121 = *Ch.L.A.* XLII.1207; *CIL* III, pp. 934–5 (no. V) = *FIRA* no. 122 = *IDR* I.35.

it was so routine that it is referred to in the Dacian document by a mere abbreviation, ‘e.a.q.e.r.p.’.¹³²

Private citizens could probably make payments at a distance by means of a *permutatio*, without making a payment with coins.¹³³ Commentators will continue to dispute exactly what was going on when Cicero telegraphically pointed out to Atticus the three possible methods of realizing a *nomen* which was in some way due to him from Caesar in 46 BC (*Att.* 12.3.2),¹³⁴ but the two main points are that he had a choice, and that we do not fully understand the mechanisms in question.¹³⁵ In these circumstances, it does not seem to make sense to say that in the financial world of Rome ‘there was no negotiable paper’.¹³⁶ We can add the following material to our dossier:

- (1) Plautus’ audience could understand the lines in the *Asinaria* in which Exaerambus the wine-merchant pays a debt by ‘writing *nummi*’ (‘scribit nummos’, 440), but what matters more is that Leonida the seller considered that the sale had taken place when Exaerambus had promised to pay, evidently with the help of a banker (436–8).¹³⁷
- (2) The reference to sales in the Ephesian Debt Law¹³⁸ must mean that a considerable number of Ephesians could make purchases on credit—using money-lenders?—and this is much more likely to have been a normal part of their economy than a result of the Mithridatic War.
- (3) In Horace, *Satires* 2.3 (64–76), Damasippus buys old statues, by means of credits naturally.¹³⁹ What the poet finds extraordinary is not the procedure but that anyone trusts this particular (representative) debtor.
- (4) To confirm how far credit could extend into the world of everyday commerce we can cite the funerary monument of a first-century AD *argentarius*, L. Calpurnius Daphnus,¹⁴⁰ which has been acutely ana-

¹³² ‘eive ad quem ea res pertinebit.’ What this means is that the lender, one Iulius Alexander, required that the borrower repay the debt (the interestingly modest sum of 240 HS) to whoever happened to own the debt on the due date. I am grateful to Elio Lo Cascio for insisting on the importance of the question which these texts seem to answer. Cf. Temin (2004: 721). *Dig.* 46.2, by itself, does not seem to settle the question.

¹³³ When Atticus sent the younger M. Cicero in Athens a certain sum, it was larger than the 80,000 HS of rental income which Cicero senior had transferred to him, quite likely in cash (*Att.* 16.1.5). The difference was a non-cash payment by one Cicero to the other via *permutatio*.

¹³⁴ See esp. Shackleton Bailey (1965–70: vol. 5, appendix 1), Rauh (1989: 72–3).

¹³⁵ There are quite a lot of texts that deserve further commentary (e.g. Paulus in *Dig.* 46.3.54), but do not need it here.

¹³⁶ Howgego (1992: 3). Andreau (1999: 132) similarly says that there were ‘no negotiable bills’; von Reden (2002: 146) that the Romans possessed ‘nothing comparable to . . . negotiable bills’.

¹³⁷ Cf. Barlow (1978: 77).

¹³⁸ Above, p. 233.

¹³⁹ ‘scribe decem a Nerio: non est satis; adde Cicutae/ nodosi tabulas, centum, mille adde catenas’ (69–70), ‘“Write ten from Nerius” “It’s not enough” “Add a hundred tablets from wily Cicutā”. Add a thousand obligations . . .’. The passage can be punctuated in different ways. For legal commentary see Sacconi (1971: 175–6).

¹⁴⁰ *CIL* VI.9183 (*ILS* 7501); the monument is illustrated in Andreau (1974: figs 11 and 12).

lysed by Andreau.¹⁴¹ Daphnus was intimately involved in fishmongering auctions in the capital, no doubt a very profitable business at the luxury and wholesale ends of the trade. How could an *argentarius* be concerned in such a mundane business? Obviously he provided credit for big-ticket purchasers.¹⁴² He was a kind of living credit card, and it follows that some of the buyers bought on credit.¹⁴³

- (5) Thür and Rathbone seem to have demonstrated decisively that the commercial loan referred to in the 'Muziris' papyrus¹⁴⁴ was made in Alexandria, and Rathbone has argued that the lender himself purchased the merchant's shipment (which came from India), paying the equivalent of slightly less than seven million HS: 'this, or most of this, was probably paid through a bank as a paper transaction'.¹⁴⁵
- [[(6) In the Caecilius Iucundus documents from Pompeii various different verbs are used to indicate that sellers had received money from him: *accepisse*, *persoluta habere*, *numeratos* or *numerata habere*, *soluta habere*. Andreau observed that, while these terms mostly seem to be interchangeable (there are two versions of each text), 'it never happens that *persolvere* and *numerare* are both used in the same document'. 'Numerare' means 'to pay in cash', and Andreau concluded that the word 'persolvere', meaning 'to pay through an intermediary', was used whenever the payment had been paid into the seller's account (Andreau 2008: 218, drawing on Andreau 1987a: 574–5). A payment had been made but no coins had changed hands.
- (7) In an intriguing article, Cuvigny has recently shown that the expression 'της τιμης' in Roman documentary papyri refers to purchases for cash (Cuvigny 2005). She appears to hold that the alternative would normally have been barter, but there is no textual evidence for that—though barter doubtless continued—and on the one occasion when the alternative to 'της τιμης' is clearly expressed (in an ostrakon letter from the Mons Claudianus of c. 152, *O.Claud. inv.5477*) the alternative is—credit. I take it that it was not only on the Appianus estate that Roman Egyptians often bought on credit.]]

Scholars have sometimes been distracted by hunting for exact ancient equivalents of modern institutions. In his early works Raymond Bogaert argued that there was no such thing as a cheque in the Greek world, but further study led him to change his opinion, and it is now generally agreed that some such

¹⁴¹ Idem (1987a: 111–16).

¹⁴² Cf. *ibid.* 114. For another *argentarius* in cahoots with fishermen see Cicero, *De off.* 3.58.

¹⁴³ Suetonius, *Nero* 5, provides further evidence of purchasing through bankers.

¹⁴⁴ See above, n. 98; Thür (1988: 229–33), Rathbone (2001: 39–50).

¹⁴⁵ *Ibid.* 49.

documents were used in Ptolemaic Egypt and in Palestine, although the evidence from Roman Egypt is very slight.¹⁴⁶ It is not crucial: we are not seeking for anticipations of modern institutions. Scholars now agree that bankers in Graeco-Roman Egypt made 'virements', transfers of money by means of paper transactions,¹⁴⁷ and rather surprisingly, in a sense, we know that bankers made transfers between accounts *inside* their banks (*P.Tebt.* 890),¹⁴⁸ but the total sums of money involved in any given year cannot have been great. That is of little import, however: the point is that it was normal to ask your bank to make a payment for you.¹⁴⁹

Nothing in the evidence suggests that any of these non-coinage payments were abnormal, at least for urban residents with a certain amount of property.

COMMODITY-MONEY, COINS, FIDUCIARY MONEY

To measure the significance of all this, we must briefly review the use of other kinds of money and near-money. We may as well do this in the order of their first historical occurrence.

The expression 'commodity-money' is sometimes used now to refer to money consisting of coined precious metals, but I shall keep that category separate and say something first about the use of other commodities as money.¹⁵⁰ Definition is not easy. Presumably we should exclude commodities used in barter, but perhaps we should include commodities used to make payments in kind. Text-books say that commodity-money 'is used as a medium of exchange and is also bought and sold as an ordinary good', and tend to offer gold as an example.¹⁵¹ That seems to exclude the common types of payments in kind we know about in the Roman Empire, which were taxes and rents and not purchases.¹⁵² We need not take a position here in the

¹⁴⁶ Andreau (2000: 778), relying on the works cited above, n. 109. The argument from silence is probably enough to show that such things were not known in Italy. Andreau (1999: 42) is concerned that the Romans did not use cheques 'transmissible by endorsement', unaware apparently that these are not permitted in some advanced economies (they have not been allowed in New York State for some years now). But he observes (p. 49) that the cheques analysed by Bogaert and Bagnall extend into fairly ordinary social strata.

¹⁴⁷ Bogaert (1983b: 22–3).

¹⁴⁸ Cf. Andreau (1987a: 564 n. 133).

¹⁴⁹ Ibid. 39. The quite numerous surviving sales-contracts concerning land and buildings in Egypt tell us less than might be hoped about the relative importance of credit: all are of modest or very modest dimensions (cf. Montevicchi 1943: 45–6), and some are disguised loan arrangements (Montevicchi 1941: 106). In the high Roman Empire, banks were often involved, but the majority of these smallish payments are said to have been made in cash.

¹⁵⁰ This topic deserves further study; see now Hollander (2007), to which I am much indebted. On bankers and commodity-money see Andreau (1987b), Bogaert (1988), Coles (2001: 152) (there was a regular system of transfers).

¹⁵¹ Fischer et al. (1988: 142). But Mankiw (2003: 77) differs somewhat.

¹⁵² For borrowing and lending in kind in Graeco-Roman Egypt, see Foraboschi and Gara (1982).

controversy over the relative importance of taxes in kind and taxes paid in money,¹⁵³ and no one doubts that there was plenty of taxation in kind.¹⁵⁴ In some current work on land leases in Roman Egypt, Peter van Minnen points out, in effect, that in the first and second centuries AD the lessees paid wholly or partly in kind in all cases ($n = 10$) and in 68 per cent of all cases ($n = 44$), respectively.¹⁵⁵ But payment in kind will not raise any eyebrows or define the system. What matters in the present context is whether commodity-money adds to the money supply. I suppose that the answer is yes, but in a particularly limited and useless way, since the recipient cannot spend it without converting it into some more liquid form (and often cannot even store it permanently, since it may be perishable).¹⁵⁶ |

As for coinage, it is not my intent to deny that coinage was much more important in making payments than it ever is in a modern industrial economy.¹⁵⁷ It has already been suggested that a large segment of the population may never have had occasion to use money except in kind or in coin. Even if we confine ourselves to large-scale payments, coins were of course of great importance. Real property was sometimes paid for in cash (more on this below). Many provincials paid their taxes in this fashion, and provincial governors evidently received their substantial local allowances in coins (Cic. *Att.* 2.6.2 end), just as soldiers always had to be paid, or at least promised their pay, in the same way. However when Cicero, in sympathy with the Senate, wanted to intervene in the credit market in 63 BC to stem the flow of funds out of Italy, and banned the export of gold and silver, sending a quaestor to Puteoli to put the regulation into effect,¹⁵⁸ this was partly, I suppose, political theatre, and partly an attempt to prevent the export of the kind of 'emergency gold' referred to earlier (but he may also have been trying to prevent the export of coins).

What is most interesting about the aggregate stock of silver coinage in the late Republic is that it apparently starts to decrease after about 79 BC, having previously risen steadily for generations,¹⁵⁹ though there is no reason to think that there was any major decline in economic activity. Whatever exact motives led the authorities to mint coins, we may presume that this decrease would not have taken place if it had caused serious inconvenience to the well-to-do. The

¹⁵³ On this matter see e.g. Duncan-Jones (1994: 21 etc.), Hopkins (1995–96: 55–7 [2002: 215–17]), Rathbone (2003: 224).

¹⁵⁴ For taxation in kind in Roman Egypt see most recently Rowlandson (2001: 147–9).

¹⁵⁵ Van Minnen (2008: 230).

¹⁵⁶ Yet some of the Egyptian bank transfers were probably private payments.

¹⁵⁷ But the role of gold and silver coins was still considerable even in advanced countries until the First World War.

¹⁵⁸ Cicero, *Vat.* 12; cf. *Flacc.* 66.

¹⁵⁹ Hopkins (1980: 109), who was necessarily puzzled (p. 111). The numbers have been disputed (Buttrey 1993: 335–51; 1994: 341–52; *contra* Hopkins 1995–96: 53 [2002: 212]). For further discussion see e.g. Backendorf (1998: 200–203), Verboven (2003: 57–62). Lockyear 1999 (see esp. fig. 13) seems to have put the fact beyond reasonable doubt.

reason why it did not have this effect, I suggest, was that a large, and probably increasing, proportion of their sizeable financial transactions was being carried out wholly or mainly by means of documents.

It may have been normal in large transactions to pay some percentage in coin, according to the circumstances: thus when Cicero, some fifteen years after the purchase of his house on the Palatine, was contemplating another purchase on roughly the same scale (the 'Silius property'), he told Atticus that he wanted to pay in cash (*numeratum*) and not by *aestimatio* (12.25.1), a procedure which would have permitted the seller to choose any property of Cicero's that he liked, up to the agreed value (the valuation of that property having been carried out by a third party). 'You will squeeze 600,000 out of Hermogenes,' he says, cryptically; 'and I see that I have 600,000 at home'. For the rest, he will borrow at interest from the seller, 'until', cryptically again, 'we pay by means of Faberius or with someone who is in debt to Faberius'.¹⁶⁰ Why did Cicero not simply pay with *nomina* in this case? Probably because he could not at this juncture afford to reduce his income (see *Att.* 12.25.1), and the Horti Silaniani were to be a convenient residence (12.29.2, cf. 27.3) not a productive property (see 12.31.2: 'sed mihi utrivis...').¹⁶¹ |

One underlying reason for this growth in documentary transactions was clearly that in a Mediterranean-wide empire it was dangerous as well as inconvenient to send large sums of specie backwards and forwards over long distances. It was, of course, known to be risky to transport large sums of coin by sea,¹⁶² and both officials and private citizens probably tried to avoid it whenever they could.¹⁶³ We have noticed that shipwrecked trading ships seldom seem to have carried many coins in high-classical times. And when a numismatic scholar set out to list evidence that shows that 'coin might on occasion be carried from one region to another to purchase goods',¹⁶⁴ his

¹⁶⁰ 'dum a Faberio vel cum aliquo qui Faberio debet repraesentabimus', and, he adds, 'erit etiam aliquid alicunde'. Shackleton Bailey (who deleted *cum*) translated 'until we pay cash with what comes from Faberius or some debtor', asserting that this is the normal meaning of *repraesentare*. It is clear in any case that, whatever Faberius' obligation to Cicero consisted of (*illud Faberianum* was a serious problem for Cicero: *Att.* 12.29.2), it was not a *nomen* that could be used in payment, even though it could be sold (12.31.2), presumably at a steep discount; it is equally clear that if and when Faberius paid off this obligation he might do so by means of a *nomen* ('aliquo qui Faberio debet'). Faberius was of course an assistant of the dictator. As for the meaning of *repraesentare*, *praesens pecunia* means 'ready money', but matters are, I suspect, more complicated than Shackleton Bailey allows (his claim that in *Dig.* 35.1.36 *repraesentare* means 'pay cash' cannot be right): the *OLD* understandably hedges a little with 'pay (a sum) in ready money, pay at once', and it might be better to translate 'settle an obligation', *vel sim.*; there is never, as far as I can see, any clear implication of coins.

¹⁶¹ An intriguing possibility: Cicero intended to pay several million sesterces in cash, but in the new gold coins, which would have meant that each million would have weighed a relatively manageable 96.5 kg.

¹⁶² Cicero, *Fam.* 2.17.4, Plutarch, *Cat. Min.* 38.

¹⁶³ Sometimes of course it was necessary to ship large quantities of coin, especially in emergencies (e.g. Plutarch, *Brut.* 24, 25).

¹⁶⁴ Howgego (1994: 7).

harvest was remarkably meagre. It amounted to two texts concerning the Indian Ocean trade, and a single fragment of the republican dramatist Pomponius.¹⁶⁵

How did all this change when Rome began to produce a regular gold coinage in 48 BC, or at least in 46? It was now much easier to pay large bills in coin, if one wanted to, and few people would now doubt that gold coins took on a major role. One scholar has guessed that 'gold soon made up more than 25% of the money supply'.¹⁶⁶ The long-term effects can be judged to some extent from the finds at Pompeii, where gold coins, in terms of value, make up 69 per cent of all the coins found.¹⁶⁷ When substantial amounts of gold arrived in Rome as booty after republican wars, it did not quickly or directly turn into money. But the first major annexation of a new province after the introduction of gold coinage at Rome, the annexation of Egypt, resulted in a great increase in *res nummaria* and this drove down interest rates for a time (Suetonius, *Div. Aug.* 41).¹⁶⁸ It may be fortuitous that we hear of this, but it may also be the case that Egyptian gold found its way on to the Roman credit market more quickly and directly than precious-metal booty had under the Republic. Be that as it may, the availability of gold coins probably reduced the importance of documentary transactions, but not by much, for physical convenience was in fact no more than a subordinate reason for most kinds of non-cash payments. A large proportion of the texts I have cited to show the importance of non-cash payments belong in fact to this new period. Incidentally, my thesis will solve one of the problems posed by a leading authority, Richard Duncan-Jones: why were members of the Roman upper class so little aware of and so little interested in the changes in Roman imperial coinage that so interest numismatists?¹⁶⁹ The answer is that these changes mattered to them much less than we usually think.¹⁷⁰

When the earliest Greek and Roman coins were minted, they presumably had the same value in the marketplace as the equivalent quantity of metal. From very early on, however, states from time to time attempted to establish a conventional value for coins that, as metal, were worth less than their 'fiat' or 'fiduciary' value.¹⁷¹ They could do this by debasement or by lowering the

¹⁶⁵ Lines 115–16 (*Scaenicorum Romanorum Fragmenta* ed. Ribbeck, II, p. 292). Pliny, *NH* 33.46 is irrelevant.

¹⁶⁶ Verboven (2003: 62).

¹⁶⁷ Duncan-Jones (1994: 71), following L. Breglia and E. Pozzi. Yet some caution is needed: there were more rich people in Pompeii than in the average Roman town.

¹⁶⁸ For some useful commentary on this passage see Andreau (1985: 3–11).

¹⁶⁹ Duncan-Jones (1994: 29, 198).

¹⁷⁰ I do not see how the *tesserae nummulariae* could be used against the main thesis of this paper. The most plausible way of explaining them, in my view, is that they were produced by assayers working for the *societates publicanorum*: Andreau (1999: 80–89).

¹⁷¹ See now Seaford (2004: 136–46). Finley (1985: 196) simply asserted otherwise with no discussion.

weight standard.¹⁷² I refer to this matter here solely because | the Roman state *may* by this means have increased the money supply without having had to find and process new supplies of gold, silver, and bronze. Under the Republic, public worrying about the purity of the coinage (as in the praetorship of Marius Gratidianus in 85 BC) suggests that the value of that coinage in the marketplace had not up to that point departed very far from its value as metal. But in the high Empire Romans counted out coins, they did not weigh them out,¹⁷³ and while there is naturally some evidence that the purity of the coinage was still a concern under the principate,¹⁷⁴ it may be that the *nummularii* who tested coins were mainly on guard against outright forgery.

The obvious possibility is that the gradual but in the end severe debasement of the silver coinage that took place from Nero's time onwards, together with the decline in the weight of the denarius,¹⁷⁵ radically increased the fiduciary element in the coinage's value, as scholars have from time to time supposed.¹⁷⁶ The *antoninianus* in any case was probably fiduciary coinage.¹⁷⁷ The only place one can really be sure one way or the other (because it is the only place where prices can be correlated with the purity of the coinage) is Egypt, and there it is quite certain that prices did not track debasement.¹⁷⁸ Fiduciary coinage would not of course have increased the money supply if the value of the coinage in circulation remained approximately the same (or increased less than the percentage of the debasement), with the government simply using less silver. But that is not what happened:¹⁷⁹ the (nominal) value of the coinage in circulation continued to increase throughout the period under consideration here. At the same time it is clear that after about AD 200, if not before, well-informed people had to some extent become suspicious of debased coins.¹⁸⁰

QUANTIFICATION

The financial system of the Roman Empire is only loosely comparable with that of a modern state, but to some extent the same causes have the same

¹⁷² Also in theory by decreeing that coins of pure metal had more value than they would have had as bullion (Seaford 2004: 339–43).

¹⁷³ Strobel (2002: 97).

¹⁷⁴ Tertullian, *De paenitentia* 6.5 is not much to go on. But see Petronius, *Sat.* 56; Martial 12.57.7 (Neronian coins under suspicion).

¹⁷⁵ See Duncan-Jones (1994), fig. 15.4 (cf. 15.7) for the former effect, down to the reign of Severus Alexander, fig. 15.2 for the latter. Occasionally these processes were reversed for a time. Coins also became more variable within emperors' reigns.

¹⁷⁶ See e.g. von Freyberg (1989: 87–9). Cf. Lo Cascio (1981: 79).

¹⁷⁷ Not all agree: see Lo Cascio (1993: 261–7).

¹⁷⁸ See e.g. *ibid.* 275.

¹⁷⁹ See esp. Duncan-Jones (1994: 103–5).

¹⁸⁰ Evidence was gathered by Duncan-Jones, *ibid.* 218 n. 25.

effects. The credit system of a modern state brings into effect a money multiplier, as was mentioned earlier (p. 228):¹⁸¹ for every dollar of reserves, there are several dollars of extra money. Freyberg, aware of some of the evidence for Roman credit-money, had at least the merit of asking whether the Roman credit system too can have had a multiplier effect. ‘Wahrscheinlich kaum,’ he says,¹⁸² but on quite insufficient grounds—there were no clearing centres. The Wisselbank of Amsterdam, founded in 1609, was somewhat precocious;¹⁸³ London had no clearing bank until 1776,¹⁸⁴ and the United States’ first clearing house was established in New York in 1853.¹⁸⁵ In other words, Freyberg too fell into the trap of looking for modern institutions in antiquity. What matters here is not whether there were clearing centres (which would no doubt have been a considerable convenience in Rome or Alexandria), but whether lenders had more recoverable debt than they had state-issued money, i.e. coin, in reserve—and the answer to that is obviously that most of the time they did.¹⁸⁶ But how much did credit-money add to the money supply of the Roman Empire? Some will respond to the argumentation of the previous sections by claiming that the addition was small. My view is that (a) we cannot know this, and (b) even if the addition was limited, that would not greatly diminish the strategic importance of credit-money in the Roman economy.

In this context ‘small’ must mean ‘small’ in relation to GDP and/or to the stock of coinage. Since we do not seem to possess any clear information as to the normal ratio of the money supply to GDP in any early modern economy (our best type of comparison), and we have in any case only the most general notion of the size of the GDP of the Roman Empire,¹⁸⁷ we should turn our attention to the stock of coinage. But here too there is a marked lack of scholarly consensus. Duncan-Jones’s detailed argumentation led him to the conclusion that the value of the gold and silver coins in circulation in the second-century Roman Empire was in the order of 19 billion HS, and that

¹⁸¹ For a fuller account see Fischer et al. (1988: 173–5).

¹⁸² Von Freyberg (1989: 93). His other complaint is that Roman finance lacked ‘legal and technical standardization’, which could also be said about modern capitalism. Lo Cascio also argues that there was no multiplier effect, or none that mattered (1996: 279–80), on the grounds that this would require ‘the possibility of a direct transfer of credit’, but (a) practitioners of *delegatio*, and probably bankers too, did effect such transfers, and (b) standard accounts of the money multiplier do not in any case make it depend on *how* the bank or bank-like lender conveys funds to the borrower.

¹⁸³ See de Vries and van der Woude (1997: 131). [[On the non-existence of a Roman clearing bank see now Stelzenberger (2008: 172–4).]]

¹⁸⁴ G. Davies (1994: 321–2) (even then its function was quite limited).

¹⁸⁵ Gorton (1985: 278).

¹⁸⁶ I have already cited the evidence of the Ephesus Debt Law and of Scaevola in *Dig.* 40.7.40.

¹⁸⁷ Hopkins argued rather cogently that ‘as a metaphor’ we might conclude that Roman GDP was greater, perhaps much greater, than 9 billion HS p.a. in the high Empire (150 HS per person): Hopkins (1995–96: 44–6 [2002: 197–9]).

there was probably an additional 2 billion HS of bronze coinage.¹⁸⁸ This would mean that there existed something close to 350 to 420 HS of coinage per person (depending on one's estimate of the whole population). I at first found these figures implausibly high, but comparisons with pre-industrial Holland and England, which I do not reproduce here, convinced me that they are at least possible. Other scholars, however, have on the whole rejected them.¹⁸⁹ (Duncan-Jones's proposals for the volume of coin production have also been criticized,¹⁹⁰ though the critics have not, as far as I know, dared to say what levels of production they would find more plausible.) This is not a problem to be solved here. Duncan-Jones was, of course, fully aware in principle that from Nero's reign onwards the government commonly had strong motives to re-mint coins,¹⁹¹ but he perhaps underestimates the likely tendency of hoarders to prefer old coins to new—for many undoubtedly knew that the older a coin was the purer it was likely to be (this tendency could easily co-exist with a partially fiduciary coinage). The claim that 'hoards normally represent cross-sections of coin in circulation at a particular date'¹⁹² is probably to a significant degree false. No need to debate here the contention, which has found very little favour,¹⁹³ that precious-metal hoards represent military donatives. Re-minting probably had a much greater effect than Duncan-Jones allows.

Most scholars probably still prefer an estimate of money stock in the range 6–8 billion HS—which (paradoxically, since he did not know the evidence even at second hand) appears to derive from R. W. Goldsmith¹⁹⁴—while they recognize that these figures are | very hypothetical.¹⁹⁵ Goldsmith, incidentally, who imagined a financially primitive Roman Empire, was nonetheless content to imagine that the value of financial instruments was not much less than 10 billion sesterces.¹⁹⁶ Needless to say, these figures are not robust enough to support an argument. But the reader will see, I trust, that there are no data of any kind that should make us suppose that credit-money was relatively small in quantity.

But it does not really matter. The concept 'money supply' is in a sense too modern to apply to the Roman Empire. What matters, after all, if we are

¹⁸⁸ Duncan-Jones (1994: 168–70) (12.012 billion HS of gold, 6.864 billion of silver).

¹⁸⁹ Jongman (2003: 186) accepts it and is surprised by the consequences.

¹⁹⁰ e.g. by Metcalf (1995: 156) and Howgego (1996a: 208–9).

¹⁹¹ Duncan-Jones (1994: 104, 197–200).

¹⁹² Ibid. 115; for the arguments that support this see pp. 77–85. Howgego (1996b: 220–21) makes a similar assumption, even though he knows that it can sometimes be falsified (p. 221 n. 12).

¹⁹³ See, against, Howgego (1996a: 208).

¹⁹⁴ Goldsmith (1987: 40–41). This would have been in AD 14.

¹⁹⁵ Cf. Lo Cascio (2003: 6.) Hopkins (1995–96: 75 [2002: 227 n. 90]) judged 21 billion much too high an estimate, drawing attention to what it would mean for individuals, especially since 'significant sectors of the rural economy were non-monetized or under-monetized' (an assertion about which I have some reservations).

¹⁹⁶ Goldsmith (1987: 57).

thinking about the rate of development that was possible in the Roman economy, is not (as it might be in a mass-market modern economy) whether the consumer has money and credit at his/her disposal, but whether the decurion-class buyer and the small entrepreneur can find money to borrow when they need to (at a reasonable price—that is another avenue of enquiry). And the evidence combines to suggest that they could. As Andreau has pointed out, we hear of capital unable to find borrowers (Petronius, *Sat.* 53, Pliny, *Ep.* 10.54 and 55—admittedly a special kind of case), not the reverse.¹⁹⁷ The likelihood is that the big borrowers, and those who needed funds for business or agricultural purposes, usually found lenders at tolerable rates unless they were recognized credit risks. That leaves plenty of room for bankruptcy and impoverishment, but it does mean that the economic failures of the Roman Empire, in the period in question, are unlikely to be traceable in the main to a shortage of money.

THE THIRD-CENTURY MONETARY CRISIS: AN OVERVIEW

To round out this picture, we should ask what happened to the money supply after the Severans, down to AD 301. The system I have described eventually underwent fundamental changes, indeed largely ceased to function, and it is essential to suggest how and why.

After about AD 260 *argentarii* disappear from the sources, and after AD 300 *nummularii* too;¹⁹⁸ there is every reason to think that they had succumbed to a deteriorating economy. This does not mean that banking had wholly died out (we know it had not), and we know from the Currency Edict what we could not in any case have doubted, that lending and borrowing continued,¹⁹⁹ but the disappearance of bankers from the evidence does suggest that, by AD 300 at least, the volume of credit-money had drastically shrunk. The unexpected burst of inflation under Commodus must have hurt creditors severely, and the obvious problems of the mid-third-century economy, in particular political uncertainty, decreased agricultural production, and greatly diminished long-distance trade, did further damage. One wonders how much of the credit structure was left by the time of the new inflation under Aurelian.²⁰⁰

¹⁹⁷ Andreau (1999: 93). For further evidence see Kehoe (1997: 52) (where, however, the dates of the texts quoted may have some relevance).

¹⁹⁸ Andreau (1986; 1987a: 46, 49; 1999: 33–4).

¹⁹⁹ See Erim et al. (1971: 173) (fragment b, lines 3–10).

²⁰⁰ For a number of relevant considerations see Carrié (2003b: 266–7).

Why was there a viciously sharp acceleration in prices in the 270s, a roughly tenfold increase in 274/275?²⁰¹ (No need to quibble here as to how closely the rise in Egyptian prices corresponded to an Empire-wide phenomenon.) A conventional Fisher explanation | would link the event to an abrupt increase in the money supply. But the two phenomena seem so vastly disproportionate—in fact we do not know that money supply in the Roman Empire increased at all in the period directly prior to the rise in prices (as distinct from earlier decades). There was a greatly increased production of Alexandrian tetradrachms from 265 onwards, but not enough to multiply the money supply eight to ten times—and in any case we are looking for an Empire-wide cause.²⁰²

Neither can we simply attribute the inflation of the AD 270s to the lighter weight of the *aureus* or to the debasement of the silver coinage, because they had already been marked tendencies long before. Those on the other hand who have denied that debasement had anything to do with the matter²⁰³ in effect ignore an event of a kind unknown to Fisher, namely an abrupt loss of confidence in the silver coinage,²⁰⁴ leading to what we might call a post-fiduciary coinage, in which the government was obliged to improve the coinage's precious-metal value. The cup of debasement had finally run over (and it is tempting to think that the remarkable revolt of the Roman mint officials, about which we know very little,²⁰⁵ reflects an unprecedented crisis). It was a matter of panic, in all probability, certainly not of cold reasoning (so it scarcely matters that Aurelian's coins were not visibly much worse than his predecessor's). Egyptian bankers were already sceptical about the value of the coinage in circulation in 260 (*P.Oxy.* XII.1411=*Sel.Pap.* II.230). We can see references to 'old' and 'new' money in Egyptian documents of the 260s and later²⁰⁶ as signs of anxiety about the viability of the coinage. Under Claudius Gothicus and under Aurelian the tetradrachm once again shrank and lost more of its already minute silver content.²⁰⁷ All it needed was the bankers' refusal to accept legitimate coins; then, as in 260, tax-gatherers, and presumably borrowers too, would soon be in trouble and have to follow suit. What is most remarkable about all this is that the loss of confidence was apparently Empire-wide, which may have something to teach us about the nature of the imperial economy's 'integration'.

²⁰¹ For the scale and chronology see above all Rathbone (1996b; 1997).

²⁰² Increased coin production in Alexandria: Lendon (1990: 111). But there is no confirmation of this in Christiansen (2004).

²⁰³ Von Reden (2002: 158).

²⁰⁴ Cf. Schwartz (1978: 178).

²⁰⁵ The sources are listed in *PIR*² F 140.

²⁰⁶ For the fullest list of references see Rathbone (1996b: 336).

²⁰⁷ *Ibid.* 326–8. The Palmyrene occupation of Egypt between 270 and 272 presumably diminished confidence in the central government. [[And see the Addendum.]]

This was by no means the final end of all attempts at fiduciary coinage, but it was in effect the end of a period. We know that Diocletian intended his silver coinage to have some fiduciary value, 60 per cent above its bullion value;²⁰⁸ whether his wishes were fulfilled and for how long is another matter.

As Carrié has observed,²⁰⁹ one might have expected that after Diocletian introduced the *solidus* credit markets would have re-established themselves, but apparently they failed to do so on any large scale. This non-event and its explanation deserve further enquiry. Can the disappearance of specialized personnel be a sufficient explanation? Had it become significantly more difficult to recover loans at law? |

CONCLUSION

Greek historians have frequently argued, Edward Cohen demurring, that classical Greece depended for its money exclusively on coins. By an extraordinary glissando they have often included the Roman Empire in their generalizations as well, as if it were some sort of appendage.²¹⁰ We have seen that there is every reason to think that credit-money in particular enabled the Romans to extend their money supply far beyond the limits of their monetized metal. The real connection with the earlier Greek world, not explored in this article, is through the borrowing of financial practices from the Hellenistic kingdoms and cities.

The purpose of this article has not been to demonstrate that per capita growth occurred in the late Republic or under the principate (though such growth probably did occur in the second of these periods), but rather that shortage of money was not to any important extent a brake on growth. What impeded sustained economic growth in Roman antiquity was not a shortage of money, but mainly the failure to adopt technologies, especially a fuel technology, that would have allowed the Romans to escape from the Malthusian impasse.

Nonetheless it is worth clearing some cobwebs out of the attic. Hitchner has recently maintained that a monetary system that consisted purely of coinage would have been no impediment to economic growth,²¹¹ but it is unlikely that many scholars agree with him. Most will continue to think that the nature of the monetary system had at least some impact on the possibility of growth.

²⁰⁸ Lo Cascio (1981: 79 n. 22) showed that Diocletian wished his silver coinage to be fiduciary; see further Lo Cascio (1996: 284–5). Cf. Aubert (2003: 253).

²⁰⁹ Carrié (2003b: 267).

²¹⁰ An extreme example is Meikle (1995), who sways dizzily backwards and forwards between classical Athens, 'the Greeks', and the ancient world in general.

²¹¹ Hitchner (2005: 211).

What this article has attempted to demonstrate is that the Roman monetary system was far indeed from relying entirely on coinage. Romans, especially those whose credit was good, frequently made payments without coinage. It is difficult to define money and the money supply (and the strategy here has not been to import ready-made definitions from contemporary economics but rather to work out, with the assistance of contemporary economics, definitions that are appropriate to the Roman economy), but we may reasonably think that credit-money added very significantly to the Roman Empire's money supply. Perhaps the case set forth here can be disproved, but there is a lot to explain away.

[[*Addendum*

The main additional evidence that has come to hand since this paper was written was mentioned in Harris 2008a and has been inserted above, p. 243. For a brief discussion leading to a broadly similar conclusion see Stelzenberger (2008: 174–8).

Items (1), (3), (6) and perhaps (7) (above, p. 243) combine to make it unlikely that Hollander (2008: 134) was right to claim that payments by means of credit-money were only used by traders and the very wealthy (that seems to be his meaning).

There is more coin-hoard evidence from shipwrecks suggesting that merchants became much more coin-dependent from the late third century AD onwards. A hoard of at least 3,500 coins discovered in the shallows at Rimigliano near Populonia (De Laurenzi 2004) is the earliest late-antique hoard that derives from a wreck (cf. above, p. 227). It closes with many coins of Postumus (ob. 269), which suggests that credit arrangements were now much harder to make—hardly surprising given that Gaul and Italy had different rulers. It is clear from the coins recovered in the harbour of Antibes that a vessel sank there containing a large collection of coins minted between 300 and 317 (G.B. Roger 1981). Finally, a large hoard (182 kilos) from off the coast of Astypalaea is mentioned by Whitley (2002–3: 78) (pointed out to me by Michael Crawford): it is fourth-century or a possibly a little later. Strobel (2002: 127–49) offers a different account of the evolution of Roman money in the second half of the third century, an account that I plan to discuss elsewhere. Sitta von Reden's forthcoming book *Money in Classical Antiquity* (Cambridge) will certainly be an important contribution.]]

Part VI

Overviews

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The Roman Economy in the Late Republic, 133–31 BC

(2007)

INTRODUCTION

Conventionally enough, this chapter will attempt to answer questions about economic growth: did per capita GDP grow in the late Republic, and what determined whether it did or not? Which features of the Roman world assisted growth, which impeded it? It should also be our aspiration to recreate the economic lives of flesh-and-blood people, peasants, slaves, craftsmen—and the rich (who bulk so large in the evidence). Economic history should tell us among other things who went hungry, what work was like, and who could afford every amenity (or, as economists say, utility).

Prime topics therefore will be the actual mechanisms of economic life (their degree of technical development) and their capacity for delivering a decent physical existence, and beyond that the standard of living of each social class or group. This is a fairly mainstream approach: when D. C. North set out his agenda, he included in his notion of economic ‘performance’ the question of income *distribution*.¹ In addition, we should not neglect the field of ‘public goods’: it may be important to consider the effects of the Roman habit of allocating plentiful resources to some public ‘goods’, such as foreign wars and the water supply, and few to others, such as mass education.

There can hardly be said to be one single accepted view of the late-republican economy. An experienced archaeologist has written, with quotation marks admittedly, of an ‘economic miracle’,² which may be an Italocentric view. Gelzer once wrote vaguely but not without reason of the ‘chronic unhealthiness’ of the

¹ North (1981: 3). Nowadays some economists and even the World Bank realize the complete inadequacy of GDP as a measure of economic performance: see e.g. Todaro (1997: 164–71). [[For most of the places mentioned in this chapter see Map 11.1.]]

² Manacorda (2001: 392). Cf. ‘swift economic growth’ in Frier (1985: 270).



Map 11.1 The Roman Empire in the late Republic

Roman economy in the period before the civil war of 49 BC,³ a view which is hard to reconcile with the continuation through this whole century of a high volume of Mediterranean trade (cf. Table 11.1). A consensus view may hold that the period was one of sluggish and sporadic growth.⁴

EXISTING CONDITIONS, THE *LONGUE DURÉE* AND EMPIRE

There is no need to add much to what has already been said above about the ecology of the Mediterranean world and the adjacent regions, and about climate, though we shall bear in the mind that the period may have been one of warmer temperatures,⁵ with overall economic consequences unknown.

It is vital, however, to notice that well before 133 Rome, while it retained its agrarian-military economy, had also become part of a larger Mediterranean Hellenistic-Carthaginian economic system which was different in kind from the economy of Greece before 400 and from that of pre-Hellenistic Italy. The links between this world and that of Rome grew steadily stronger as Rome asserted its control over the Greek areas of southern Italy and over Sicily (we recall, for example, that southern Italy was one of the main areas of Hellenistic metal-working),⁶ and even more of course as Roman power spread into the Aegean and Asia Minor. Among the many symptoms of this linkage are the eastwards movement of Italian amphorae,⁷ the commercial settlement of Romans, Italians and their freedmen established on Delos from 166, and the presence of Italian merchants at Alexandria.⁸ The most important result of all these Hellenistic ties was arguably the spread of Greek financial sophistication to Rome and Italy.

Let us define Roman imperial power as it was in 133. It was never co-extensive with the formal 'provinces' ruled over—more or less—by Roman governors. The Roman conception of empire also included the Italian peninsula, Gallia Cisalpina, and a number of places controlled by vassal rulers (hence the standard expression *provinciae et regna/ reges*). By 133 Macedonia

³ Gelzer (1968: 221).

⁴ Cf. Hopkins (1983a: xiv–xv), and from another perspective Persson (1988: 132).

⁵ With regard to climate, however, one wonders what exactly led the respected agricultural writer Saserna (early first century BC) to assert that improved weather had in the long term made land more fertile (Columella i.1.5, with details).

⁶ Treister (1996: 320–22).

⁷ Will (1989).

⁸ Durrbach, *Choix* 107 ('Alexandreae Italice qui fuerunt', etc.) (= *ID* 1699 = *ILLRP* 343); also a dedication at Puteoli, *CIL* X.1797 = *ILS* 7273 ('mercatores qui Alexandr. Asiai Syriai negotiantur').

Table 11.1. Selected Mediterranean shipwrecks, 130s–30s BC (arranged by date)

Name	Location	Date	Known cargo	Reference (Parker 1992)
Megadim A	near ‘Atlit, Israel	130s or a little later	copper ingots, bronze, silver and gold artifacts	689
La Chrétienne A	near Agay, France	c.150–100	wine	302
Spargi	NE Sardinia	last quarter of 2nd c.	wine, pottery	1108
Dramont C	near Agay, France	late 2nd c.	amphorae, iron bars, pine resin, etc.	373
Bagaud 2	Îles d’Hyères, France	c.110–100	ingots of iron and tin	77 (‘Bagaud B’)
Agde J	S France	late 2nd/early 1st c.	lead ingots	16
Cavalière	S France	c.100	meat (pig), amphorae, pottery	282
Sant Jordi 1	Majorca	c.100	amphorae, pork, almonds, olives	326 (‘Colonia de Sant Jordi A’)
Mahdia	Tunisia	c.110–90 (?)	marble columns, sculpture and furniture, bronze works of art, lead ingots	621
Baratti B	near Piombino, Italy	c.120–80 (?)	amphorae, pottery, glass, spices	898 (‘Pozzino’)
Grand Congloué B	near Marseille	c.110–80 (?)	amphorae	473
Albenga	Liguria	100–80	wine, pottery	28
Antikythera A	between the Peloponnese and Crete	80	amphorae, pottery, glass, works of art, etc.	44
Punta de Algas	NE of Cartagena	100–50	amphorae, pottery	919
La Fourmigue C	near Juan-les-Pins, France	c.80–60	amphorae, Greek furniture	425
Punta Glavina A	Rab island, Croatia	100–25 (?)	amphorae	940
Madrague de Giens	near Hyères, France	70–50	wine, pottery	616
Palamós	N Catalonia	c.80–30	amphorae	776
Capo Testa B	NE Sardinia	c.75–25	iron bars	258
Mal di Ventre	W Sardinia	c.50	lead ingots	Africa Romana IV, 1992 (Parker 637)
Le Titan	Îles d’Hyères, France	c.50–45	preserved fish	1149
Cape Gelidonya B	Lycia	c.50–25	pottery, perishable goods	209
Santa Severa	S Etruria	50–25 (?)	amphorae	1035

was a province, Achaëa too. King Attalus III of Pergamum, who had ruled in the shadow of the Romans, died at about this time and bequeathed them his wealthy kingdom. There were still no other Roman provinces in the eastern Mediterranean, yet no one would doubt that Polybius was right to say that Rome's victory over Macedon at the Battle of Pydna (168) had effectively completed its conquest of the whole [Mediterranean] world. Outside the core area formed by Italy and the provinces, there was always a penumbra of Roman power, places where Rome received a degree of obedience—the 'informal empire', we might call it. And outside that area, which was constantly being redefined, there was another area which was also to varying degrees part of the economic world of the Romans. This shadow area will have included much of pre-Caesarian Gaul, and (to judge from the numerous hoards of Roman coins) much of Romania (Map 11.1).

The size of Rome's economic tentacles we can also judge from the career of the billionaire financier Rabirius Postumus, whom King Ptolemy Auletes had to put in charge of Egypt's finances, or from that of the senator Q. Ovinius, to whom Cleopatra VII entrusted the management of her kingdom's wool and textile production.⁹

The imperial character of the late-republican state will condition the whole of this account. Twelve major effects stand out:

- (1) The Roman state was becoming Roman-Italian, with numerous consequences: more of the profits of empire flowed to non-Roman Italy, and attempting to 'colonize' Italy was now in one way or another a very costly business.
- (2) The Roman state was very frequently at war with foreigners, even in the 30s, at considerable expense but to its net financial advantage. Apart from plunder, the largest single exaction of this period was the 20,000-talent indemnity (equivalent to 480 million sesterces) imposed on the cities of the province Asia after the expulsion of Mithridates in 86.
- (3) Tax-revenue flooded to Rome, perhaps reaching 540 million sesterces a year in cash (there were also revenues in kind) even before the addition of Gaul.¹⁰ Most of it was spent on the army or in Rome and Italy, and after the profits of Pompey's eastern wars arrived at Rome even the Italian harbour dues (*portoria*) were abolished (60). In civil war conditions in 43 direct taxation (*tributum*) was temporarily re-imposed on

⁹ Cicero, *Rab. Post.* 22. Ovinius: Orosius vi.19.20.

¹⁰ The size of Rome's revenues is probably an insoluble problem; see e.g. Hopkins (1980: 116), Brunt (1988: 505). 540 m. derives from Plutarch, *Pomp.* 45, but some think that the total he alludes to was 340 m. Although we cannot believe in any ancient number which is a 4 followed by zeroes (cf. Scheidel 1996b), Suetonius' statement that Caesar imposed annual tribute of 40 m. sesterces on Gaul (*Div. Jul.* 25) must have the order of magnitude right.

Roman citizens, but in ordinary circumstances income exceeded expenditure, and the Roman state had no long-term debt.

- (4) Their power and wealth enabled Romans and allies to acquire land in the provinces, as individual settlers and as more or less absentee landowners, and to build commercial enterprises. Meanwhile the Roman elite acquired more and more property in Italy, while the elite itself was being penetrated by Italians, both before and after the Social War of 91–89. Roman and Italian merchants spread all over the Mediterranean world in the course of the second century. We first find members of the social elite (knights) owning land in Sicily in the 130s. By the time of Varro and Atticus (by their old age, at least), it was commonplace for a rich Roman citizen to own land in Epirus, Spain or Illyria.¹¹ | The economic affairs of well-to-do Romans in both the formal and the informal empire were normally conducted with a certain level of support from the representatives of the political power.
- (5) The era of overseas colonization began slowly in second-century Spain, but such settlements could be popular, as in the cases of Iunonia (C. Gracchus' failed settlement at Carthage) and Narbo (118). Saturninus, Marius, and above all Caesar led in the same direction.
- (6) Romans believed that they had a right to exploit the provinces, and acted accordingly (sensible people recognized of course that the exploitation should not be overdone).¹²
- (7) Roman officials could sometimes change whole ecosystems, as in the Po valley.
- (8) The financial needs of peripheral rulers such as Nicomedes IV of Bithynia who bought favours from the Romans created enormous opportunities for Romans willing and able to lend to them.¹³
- (9) The labour market partly consisted of, and was entirely conditioned by, a prolific supply of slaves—still very much in demand even though the years 143–71 were the classic era of slave rebellions.
- (10) The capital city continued to grow, because tax revenues and private wealth made it an economic magnet; in spite of dangerous sanitary conditions, its population seems to have doubled in 100 years.
- (11) The Roman citizen body became more heterogeneous, ethnically speaking, at all levels, and hence its economic behaviour may have changed too.

¹¹ The Sicilian case: Diodorus Siculus xxxiv.2.3. For the geographical range of Atticus' interests see Rauh (1986: 7–9).

¹² Cf. Brunt (1988: 63–4). For Strabo, the Gauls have been 'enslaved' (iv.195).

¹³ See e.g. Appian, *Mithr.* 11.

- (12) Finally, the economy of the Roman Empire achieved a level of economic integration—unmeasurable but not negligible. The price of grain in Egypt, of slaves in Ephesus, and of iron-ore in Spain must have been strongly affected by demand in Rome. In 63, so it has been argued, high interest rates attracted funds from Italy to the provinces in the east.

DEMOGRAPHY

This chapter must not fall into the trap of discussing simply the city of Rome or simply Roman citizens. Though we may find it difficult to gather evidence about economic conditions in, say, Spain or Achaëa prior to 31 BC, it is the whole of Rome's Empire that is under consideration.

Before we can even ask whether Roman population increased or decreased in this period, we have to say which population we are talking about. Rome had many more subjects in 31 BC than in 133, for Gaul, the Illyrian coast, sections of Asia Minor, Syria, Cyprus, Cyrenaica, and Numidia had accrued to the Romans' formal domain. And the number of actual Roman citizens recorded in the census increased dramatically, from 318,823 adult males in 131 to 4,063,000 in 28.¹⁴ Whether the latter figure, and the rather higher numbers from later in Augustus' reign, referred to adult males, or to women and children too, has been a classic problem of Roman demography. There is in fact no evidence whatsoever that the basis of the count changed, and Lo Cascio has demonstrated that there is nothing demographically implausible about the increase (which included of course the promotion to citizenship of the entire free population of allied and Cisalpine Italy, not to mention the manumission of numerous slaves).¹⁵ The figures themselves were no doubt highly approximate: 318,823 was an undercount, as is shown by the 24 per cent increase at the next census in 125, and the vainglorious author of the *Res Gestae* may be suspected of exaggerating.

Was the area Rome already ruled in 133 more populous a century later? There is no decisive argument on either side, but it seems likely that this number did increase, though modestly. The further growth of Rome itself, a cauldron of germs, will have had a mildly negative effect on the overall population,¹⁶ but Roman citizens in general were probably less vulnerable now to Malthus's 'positive checks', that is to say malnutrition and its consequences (including the abandonment of infants). And as we shall see later

¹⁴ Livy, *Per.* 59; *Res Gestae* 8.

¹⁵ Lo Cascio (1994; 2001), taking ample account of counter-arguments. Cf. Morley (2001). For the census figures of this period and their sources see Brunt (1971: 13–14), reproduced by Nicolet (1994: 603).

¹⁶ See Morley (1996: 39–44) for a useful assessment.

(p. 277), historians may sometimes have exaggerated the amount of malnutrition in the late-republican city of Rome. Certainly many went hungry in late-republican Italy, but fewer perhaps, in peace time, than was usual in antiquity.

Outside Italy there may have been grave nutritional problems, especially in times of civil war and in places which were constrained to contribute to Rome's own grain supply (Sicily and 'Africa' particularly). There are places in Greece where the admittedly precarious evidence of survey archaeology indicates that the first century BC was a period of population decline. A relatively clear case is the Methana peninsula, where the number of sites reaches its lowest point in the first century BC,¹⁷ and it is hard to resist the suspicion that this was typical of Greece and perhaps even of all the areas that Rome had annexed during the second century.¹⁸

Rome itself may have grown from about 375,000 people in 130¹⁹ to a figure between 800,000 and one million under Augustus. And in some other areas, northern Italy and Spain for instance, towns will also have grown much larger.

GOVERNMENT, LAW, THE PUBLIC SECTOR

The most important thing the Roman government did for the Roman economy was to conquer vast territories; the next most important thing, in this period, was probably to found 'colonies'. But as for economic concerns, it has been widely supposed that the Roman government's interest, in late-republican times, began and virtually ended with maintaining legality and taking care of the citizens' grain supply.²⁰ Closer attention to the economic aspects of Roman imperialism, and to problems of debt and credit, suggests a somewhat different conclusion.²¹

Governments, both central, provincial, and local, concerned themselves with the food-supply, with infrastructure, with a variety of economic actors including merchants, and with law (the maintenance of legality and the

¹⁷ Alcock (1993: 42), reporting the work of Mee et al. (1991). More commonly, even this degree of chronological precision is impossible. We are typically told that in south-west Boeotia 'the Late Hellenistic and Early Roman period...experienced a very significant drop in site numbers' (Alcock 1993: 38, drawing on the work of Bintliff and Snodgrass 1985, esp. 145–7), but such are the difficulties of dating sites that the reference is to a period stretching from 200 BC to AD 300(!). Alcock was duly cautious (e.g. p. 54), but she appears to conclude that Achaëa did undergo some population decline under early Roman rule (p. 154).

¹⁸ For some apparent depopulation in the middle Ebro valley in the first century see Burillo Mozota (1991: 41), while developments in coastal Catalonia are from this point of view ambiguous (cf. Miret et al. 1991). In Africa the overall trend is unclear; the population of southern Gaul probably increased.

¹⁹ The reasonable conjecture of Brunt (1971: 384).

²⁰ See Andreau (1994a), who may, however, overstate the officials' interest in the citizens' food-supply.

²¹ Cf. Harris (2003: 281–91) [[above, pp. 202–9]], simply a sketch.

development of the laws themselves), with taxes and tariffs, with credit markets, and finally with the *publicani*, private businessmen who helped the government collect and spend its revenues. Most of this is reasonably obvious, and we need only make a few specific comments.

No one will deny that Roman governments sometimes had to think about the supply of cereals for the population of the capital. The chance discovery of an inscription revealing that about 129 an aedile solicited grain in Thessaly²² simply added to the evidence that much official effort was already required to ensure the basic food supply of what was now a super-large city by the standards of the ancient world. A key moment in the politics, if not the economics, of the late Republic occurred in 123, when a law of C. Gracchus introduced subsidized monthly sales of grain in the capital city. Sulla abolished them in 81, but they were revived in 73 by a *Lex Terentia Cassia* (consular, be it noted, in other words the | possessing classes accepted that it was necessary).²³ As the city grew, it seems to have become increasingly uncertain whether the normal system—grain exactions in certain provinces, plus the free market, plus the aediles and the *quaestor Ostiensis*—could be relied on to keep the whole city supplied: in 57 another consular law (a *Lex Cornelia Caecilia*) gave Pompey ‘absolute power over the grain supply throughout the world’ (as Cicero calls it) for no less than five years.²⁴ ‘Throughout the world’ did not mean that he was to look after the feeding of the provincials; and while some Greek cities had grain reserves and grain funds, and officials whose job it was to take thought for the grain supply, the effectiveness of all this in the late Republic is doubtful.²⁵

The late-republican capital city required a complex physical infrastructure, which included *basilicae* (commercial centres?),²⁶ *horrea* (warehouses), *macella* (food markets), porticoes, harbour works, aqueducts and long-distance roads (though the latter were built for mainly military purposes). Public Rome was transformed by public as well as private money in the second century (the pace may actually have slowed somewhat in the last generations of the Republic).²⁷ More critical for the overall economy was the physical infrastructure outside the capital, but our information is sporadic. The scale of what might happen in Italy is indicated by the vast extent of works in the Po plain, before 133. Strabo describes an ambitious later programme laconically: ‘much of Cispadana used to be marshland...but [M. Aemilius] Scaurus [censor in 109–108] drained the plains by running navigable canals from the

²² The inscription: Garnsey et al. (1984). See further Garnsey and Rathbone (1985), Garnsey (1988: 187), *SEG* XXXIV.558.

²³ The subsequent *leges frumentariae* of the late Republic are the *Lex Porcia* of 62 and the *Lex Clodia* of 58. See further Viriout (1994).

²⁴ *Att.* iv.1.7. The other sources: Broughton, *MRR* ii.200.

²⁵ Cf. Garnsey (1988: 81–2).

²⁶ My view of the *basilica*’s primary function. For a full discussion and a different conclusion see Welch (2003).

²⁷ Coarelli (1977), Galsterer (1994).

Po as far as Parma.²⁸ Romans were now willing to give some help to provincials over such matters: Marius, for instance, canalized the mouth of the River Rhône to the benefit of Massilia.²⁹ Roman canals in Lusitania may belong to the first century BC.³⁰ But most such developments still lay in the future.

A number of incidents show Roman senatorial officials outside Italy giving assistance, unsurprisingly, to financiers and merchants, sometimes by means of military force. The young noble M. Brutus lent money, at usurious rates, to the city of Salamis in Cyprus. In order to collect the debt, one of his agents obtained some cavalry from the provincial governor | Ap. Claudius Pulcher and besieged the town-councillors in their council house; five of them starved to death.³¹

That event leads nicely to the question of maintaining legality. In some ways the late Roman Republic did quite well: the numerous defects in its criminal justice system were partly remedied by Sulla, and in 67 Pompey very sharply reduced the volume of Mediterranean piracy—a problem which had admittedly long demanded a solution in vain. Twice in this period, on the other hand, legislation imposed degrees of debt forgiveness, in 86 (75 per cent) and in 49 (in effect 25 per cent); Caesar claims many had come to expect debt cancellations.³² In 82–81 and again in 49–45 and 44–28, many of the well-to-do lost their property for reasons of factional politics.

Roman law showed itself, in the course of the second and first centuries, to be more alert to the economic interests of some of Rome's citizens than might possibly be expected. As early as Cato's time, such ordinary people as those who harvested olives or grapes might find themselves in a world of formal contracts.³³ By the late Republic a number of legal developments had made commercial life more efficient. Above all, the creation of the so-called *actiones adiecticiae qualitatis*—the *actio exercitoria*, *actio institoria*, and other procedures for suing people who were de facto agents—was serious progress. This was the work of members of the senatorial elite, specifically praetors, carried out in the mid-second or late second century BC (the exact chronology is subject to argument).³⁴ The consensual contract of sale (*emptio venditio*) came in at the latest in the course of the second century BC.³⁵ The anomalous area was the law of insolvency, which was by modern standards (though hardly by ancient standards) harsh; but a very

²⁸ Strabo v.217 (I have tried not to use Strabo's evidence without weighing the likelihood that he was referring to conditions earlier than 31 BC).

²⁹ Strabo iv.183. In characteristic pre-modern fashion, he sees the advantage in the additional tax revenue, not in any putative increase in the volume of trade.

³⁰ Cf. Strabo iii.143.

³¹ As we happen to know from Cicero, *Att.* vi.1.6.

³² 25 per cent: Suetonius, *Div. Iul.* 42.2. Caesar: *BC* iii.1.3.

³³ Cato, *De agricultura* 144–7.

³⁴ Aubert (1994: esp. 70–100). For an overview of the development of private law see Crook (1994: 561–3).

³⁵ Johnston (1999: 79).

significant softening of these rules took place with the introduction, under Caesar (or possibly Augustus), of the procedure of *bonorum cessio*.³⁶

It is also probable that within this period there was some development of the law regarding partnerships (*societates*). It always remained unsatisfactory from a modern point of view, in that only certain types of partnerships were able to claim legal personality. Those entitled to do so were those considered useful to the state, and it was the *publicani* who began to receive this special treatment, in all likelihood during the general period of C. Gracchus' tribunate.³⁷ But the law of *societas* was evolving in the very late Republic, in the direction of greater flexibility.³⁸ |

Historians have probably not paid enough attention to the frequency with which politicians intervened in the late-republican credit-market, or at least threatened or proposed to do so. In addition to the two debt-forgiveness laws mentioned above, we should take note of the short-lived debt law of Cato the grandson of the Censor (118 BC?), the intervention of an aedile in the year 90, the riot which killed the praetor Asellio in 89, also of a law of the tribune Sulpicius Rufus (88), a consular law of the same year, not to mention the agitation of Catiline. It was probably in order to contain interest rates that the Senate banned the exporting of gold and silver from Italy in 63, something which it had also done on previous occasions. Once again in the winter of 51–50 the Senate apparently attempted to impose a ceiling on interest rates.³⁹

Finally, for this section, a note on the *publicani*, private entrepreneurs who lived in large part on the state. Our concern is less with their political and social history than with their structural role in the economy. They contracted with the state to supply goods (such as military clothing) and they gathered revenues (*vectigalia*) from Italian land, harbour dues, state-owned mines, and various other sources, and this meant a great deal of active management. Their great profits from empire expanded still further in 123, when a law of C. Gracchus gave them the right to bid for the huge tithe of the province Asia. Pompey bestowed on them the same privilege in the provinces he had created. They commonly operated as partnerships, and in the very late Republic these *societates* sometimes, it seems, attracted investment from senators (who were theoretically supposed to be above the more commercial profits of imperialism).⁴⁰ On the other hand there is no adequate reason to endorse the common view that the *publicani* became more and more of a cartel at the end of the Republic: Nicolet seems to have

³⁶ Ibid. (108–10). Cf. Frederiksen (1966: 128–30), who inclined (pp. 135–41) to attribute *cessio bonorum* to Caesar.

³⁷ See Nicolet (1979), whose chronology is preferable to those previously proposed.

³⁸ See Dig. xvii.2.30, 2.52.18, 2.65.8, and other texts cited in A. Watson (1965: ch. 6).

³⁹ Cato's law: the entire evidence is contained in an allusion in ORF no. 41 fr. 2 (cf. Broughton, MRR i.527). The aedile in 90 and the decree of 51–50: Cicero, Att. v.21.13. The ban of 63: Cic. Flacc. 67 (how recent these other occasions had been we are not told), with Vat. 12.

⁴⁰ See Cic. Vat. 29. Owning *partes* in the companies was part of high financial life: Cic. Rab.Post. 4.

demonstrated the survival in the 50s of independent *societates* and genuine auctions.⁴¹ We should rather think of large networks, sometimes overlapping, which reached out into the furthest provinces, where we find, for example, *publicani* running the realgar mines in Paphlagonia.⁴² But the most intriguing development was that the companies of publicans, because they accumulated funds and moved them around, became in a sense banks, and rather large ones. It would be of great interest to know how they invested. Sometimes of course we do know: they lent the equivalent of nearly half a billion sesterces to the cities penalized by Sulla in 'Asia', and in a few years the sum had multiplied by six (and so became unrepayable).⁴³ |

MONEY AND FINANCE

Orthodoxy holds that the Romans' only money was coinage.⁴⁴ In my view, this is a grave over-simplification. Let us start with a large late-republican transaction: how did Cicero transfer the 3.5 million sesterces he paid for his famous house on the Palatine (by no means the largest property price we know of in this period), at a time when Rome had practically no gold coinage? His slaves did not load 3.5 tons of silver coins. Without much doubt, it was at least for the most part a paper transaction. The commonest procedure for real-estate purchases was probably the one casually alluded to by Cicero on another occasion: 'nomina facit, negotium conficit', 'he provides the credits [or 'bonds'], <and so> completes the purchase'.⁴⁵ It was of course possible to pay quite large sums in coin, and when Cicero was contemplating another purchase on the same scale, he reported to Atticus that he had 600,000 sesterces 'at home', which could form part of the payment.⁴⁶

Money, to adapt a standard definition, is anything that serves as a unit of account, a means of exchange, or a store of value.⁴⁷ The financial instruments available to prosperous Romans were hardly less complex than our concepts M-1, M-2, M-3. In the Roman case both commodities and debt are crucial. Commodities were regularly used as methods of accounting and saving.⁴⁸ As for debt, it was

⁴¹ Nicolet (1979).

⁴² Strabo xii.562.

⁴³ The sources on this affair include Cicero, *QF* i.1.33, Plutarch, *Luc.* 20, Appian, *Mithr.* 63 and 83.

⁴⁴ For statements of what is practically a universal dogma see Nicolet (1988: 157), J. Williams (1998: 173). Howgego (1992) gives a more nuanced account.

⁴⁵ Cicero, *De off.* iii.59 (where the purchase is made by a Greek in Sicily). It is commonly imagined that large payments were made in gold bullion, and there was indeed bullion in circulation; but there is no evidence in Cicero's extensive writings or elsewhere that gold was a regular means of payment before Caesar's dictatorship. [[This matter is now discussed in more detail in Harris 2006 (above, Chapter 10).]]

⁴⁶ *Att.* xii.25.1.

⁴⁷ Cf. Hawke (1980: 76) etc., etc. On the whole matter see Harris (2006) [[Chapter 10]].

⁴⁸ As will be demonstrated in full by Hollander (2007).

the lifeblood of the system: *nomina* (i.e. outstanding loans) were a standard part of the assets of people of property, and an everyday fact of life for great numbers of others.⁴⁹ Proof positive that the traditional understanding of Roman money is mistaken appears in 49, when the credit system tottered under the impact of civil war: nervous creditors began to seek payment *even* of the principal ‘in silver’, i.e. coin, and part of Caesar’s reaction was to ‘forbid anyone to hold more than 15,000 drachmae [i.e. 60,000 sesterces] in silver or gold’,⁵⁰ which would have meant red revolution—most emphatically not Caesar’s purpose—if silver coins had really been the only form of money. There was a considerable array of financial mechanisms: you could make a payment by transferring to the recipient a debt you were owed by a third party (*delegatio*).⁵¹ You could sell a debt you were owed (a *nomen*) at a discount.⁵² And there is much more: commentators will continue to dispute exactly what was going on when Cicero telegraphically pointed out to Atticus the three possible methods of realizing a *nomen* which was in some way due to him from Caesar in 46,⁵³ but the main points are that he had a choice, and that we do not fully understand the mechanisms in question.

[[Two paragraphs are omitted here, with three footnotes, since they virtually repeat things said in Chapter 10.]]

There could hardly be such a thing as Roman monetary policy in a modern sense: throughout this period, there were other currencies in existence besides Rome’s, especially of course in the Greek-speaking provinces, and Rome evidently had no policy of replacing them.⁵⁴ Rome’s own mints coined what was thought to be necessary for the state’s immediate needs. Magistrates were, however, occasionally constrained to take action with respect to coin-purity: in about 85 Marius Gratidianus earned enormous popularity by testing the coinage and eliminating debased coins.⁵⁵

There were undoubtedly areas of the Roman Empire which remained unmonetized; there may have been peasants even in Italy and Greece who lived outside the money economy. When Roman power arrived in an unmonetized region, the change might possibly be slow in coming: Strabo considered the deep interior of Lusitania to be unmonetized; on the other hand, he found the phenomenon strange and marginal.⁵⁶ It cannot plausibly be held

⁴⁹ Cf. Howgego (1992: 13–15). It will be admitted that not all debt increased the money-supply.

⁵⁰ Cassius Dio xli.37.3, 38.1.

⁵¹ Rauh (1989: 55, 65–6).

⁵² Ibid. 69. Howgego (1992: 3) cannot be right to say that ‘there was no negotiable paper’.

⁵³ *Att.* xii.3.2; cf. Shackleton Bailey (1965–70: vol. V, appendix 1), Rauh (1989: 72–3).

⁵⁴ For the spread of Roman currency to the republican provinces, as seen by a numismatist, cf. Harl (1996: 61–72).

⁵⁵ For the sources see Broughton, *MRR* ii.57.

⁵⁶ iii.155 (not necessarily from a recent source). In vii.315 he reports that in Dalmatia they use no coinage and identifies this as a barbarous characteristic; but there are enough coin hoards there to show that he was at least out-of-date or exaggerating. The Caucasus Albanians have no coins: xii.502. The view taken here is consistent with the number of provincial coin hoards of the late Republic (for which see Crawford 1969).

that a low level of monetization was a serious brake on growth; indeed the spread of coinage use probably lowered transaction costs.

The banking system had its strengths and its weaknesses. It operated in an unregulated fashion, and most banks apparently consisted of a single principal, usually—one must suppose—with quite limited capital.⁵⁷ On the other hand, bankers were able to make payments at a distance,⁵⁸ and there were bankers where we might not have expected them, such as Herennius of Leptis.⁵⁹ Capital markets depended much more on personal ties than modern ones do (usually you borrowed from your acquaintances, not institutions)—as indeed was inevitable in a pre-print or early-print culture in which economic information was scarce and unreliable.⁶⁰ But the complexity and sophistication of late-republican finance has been wilfully ignored by the Finley school,⁶¹ no doubt partly for the innocent reason that the sources often allude to procedures which they do not explain. And there are many real obscurities, for instance about the full range of activities of the *coactores* (auction financiers).⁶²

With all this we are of course far away from the mass of the population. Could an Italian, or a Spanish or Macedonian, farmer borrow money on reasonable conditions? How were the wool-producers of Patavium or the ship-builders of Gades paid, and how did they pay their bills? That is all hidden from us, but it is very suggestive that the numerous shipwrecks of this period, unlike some late-antique ones, have never so far produced enough coins to suggest that big cargoes were paid for in cash.⁶³

OWNERSHIP AND SOCIAL CLASS

We might like to talk about income, but the evidence is altogether lacking and the best we can do is ownership. A tribune from a noble family said in | 104 that there were not 2,000 persons who owned property ('qui rem haberent'), and he was probably right in a sense—but what did he mean?⁶⁴ As for trends, the rich

⁵⁷ Cicero, *QF* ii.15.4, *Att.* iv.15.7.

⁵⁸ See e.g. Cicero, *Fam.* ii.17.4. In *Cic. II Verr.* i.102 it is implicit that the banker P. Tadius at Athens can make payments at Rome. *Att.* vii.18.4 shows that in ordinary circumstances it was possible to make payments from Italy to Greece. A good deal is known about Ptolemaic banking (Bogaert 1998–99), but how much it had in common with practices in the rest of the Hellenistic world is obscure.

⁵⁹ Cicero, *II Verr.* v.155.

⁶⁰ Early industrial England was similar: Pomeranz (2000: 179–80).

⁶¹ See instead Rauh (1989).

⁶² Concerning whom see *ibid.* 52–4.

⁶³ Cf. Parker (1992: 30).

⁶⁴ L. Marcus Philippus' remark: Cicero, *De off.* ii.73 (Cicero was of course most indignant). For Frank (1933: 253) this 'was a wild exaggeration made by an excited agitator'.

most definitely grew still richer during these hundred years—it is enough to recall Pliny's remark that the house of M. Aemilius Lepidus, consul in 78, which was the finest in Rome, was not among the finest one hundred houses 35 years later;⁶⁵ meanwhile the expansion of slave labour may lead to the conclusion that the free poor were actually worse off than before.

Can we know much more than that about changing inequalities in distribution? Can we generalize about the wealth or otherwise of the various classes or social strata? Nothing significant can be measured: we can calculate no Gini coefficients of inequality. We are on the other hand helped a little by the fact that most wealthy Romans still held a good proportion of their assets in a relatively visible form, namely land. Crassus had 200 million sesterces 'in agris',⁶⁶ which on a very hypothetical price basis of 1,000 sesterces a *iugerum* (but the price of improved land was probably higher than this) would have meant 50,460 hectares, a large area by the standards of any western European aristocracy in any period. The late-republican freedman C. Caecilius Isidorus, who according to Brunt's daring guess may have gathered up the fortunes of the last of the Caecilii Metelli, was famed for his wealth and seems to have owned some hundreds of thousands of hectares.⁶⁷ But by the end of the Republic, in any case, the fortunes of the rich normally included other large assets too: slave *familiae*, loans made to friends, freedmen, and others, and urban real estate, simply to name the principal categories.

A long controversy has centred round the concentration of landed property in Italy in the second century and later. Sallust saw it as one of the main features of the period after 146 that the families of serving soldiers were deprived of their farms by the men of power. Appian for his part seems to see the growth of large estates as a trend affecting 'public land', i.e. land that had been confiscated from the Italian allies, and there are ample signs that such land had been the subject of dispute well before the issue came to a head in Ti. Gracchus' tribunate in 133. That Italian land was sometimes seized by violence or stealth in these times is also a possibility envisaged by the author(s) of the *Lex Agraria* of 111.⁶⁸ For some time those historians | who knew of the results of surface survey (many small farms identifiable as republican, for example in south Etruria), and knew of the evidence of social continuity which is sometimes visible in the funerary inscriptions, liked to reject what the sources say about the concentration of ownership—for no adequate reason.⁶⁹

⁶⁵ *NH* xxxvi.109–10.

⁶⁶ Pliny, *NH* xxxiii.134. This was perhaps his own evaluation.

⁶⁷ The basic text is Pliny, *NH* xxxiii.135; see Brunt (1975: 625–6). As has often been pointed out, Isidorus must have made much of his fortune before 31 BC, even though he did not die until AD 8.

⁶⁸ Sallust, *Bell. Iug.* 41.8, Appian, *BC* i.7.29–8.32; for other references see E. Gabba's commentary on 7.29 (Gabba 1958: 16–17). For second-century conflict about public land prior to Ti. Gracchus' tribunate see Livy xlii.1.6 (173), *Lex agraria* (*FIRA* 8 = *RS* 2), line 18.

⁶⁹ The best statement of what used to be the unorthodox view is Frederiksen (1970–71); but his position seems to have changed somewhat by the time he wrote (1981: 270). *Contra*: see Gabba (1979: 24–5, 37) and Nicolet (1994: 617–19). Cf. also Rich (1983: 296–8).

There were regional and intra-regional variations in landowning: that is obvious and is confirmed by the material evidence, which also shows, though not with much precision, that the second century was the time when the well-organized large 'villa' started to be an important part of the Italian landscape. Settefinestre near Cosa is the most famous example, but there were others scattered up and down the peninsula.⁷⁰

The near-cessation of 'colonization' (in the technical Roman sense) in peninsular Italy after the 150s created a pent-up demand for land and hence a need for redistributions such as those provided by the Gracchan laws of 133 and 123. But apart from a handful of colonies in Italy, the laws of the Gracchi did not in the long term change patterns of landholding: when fifteen years had elapsed after C. Gracchus' reforms, the poor, says Appian, had been dispossessed again and were worse off than before.⁷¹ Between 104 and 60 at least seven tribunes of the people attempted to pass agrarian laws.⁷² But the only person who succeeded in benefiting civilians was Caesar, first as consul in 59 (about 20,000 fathers of families received allotments in Campania), then as dictator, in which role he founded a limited number of Italian *coloniae* and put into effect a programme of unprecedented ambition for sending others to the provinces.⁷³ This programme probably created as many losers as winners—the provinces had not been empty.

Not content with expanding their Italian landholdings, the rich (senators, knights, and others) had already begun to acquire land in the provinces, a trend that probably gathered speed at the very end of the Republic.⁷⁴ They had meanwhile become a more diverse group: by the end of the period, a freedman such as Isidorus could be as rich as virtually any senator. There could now be large fortunes based on commerce. When a forensic orator, to | make a point, said that 'many slave-dealers and merchants' had surpassed in wealth 'men like Africanus and Laelius',⁷⁵ he is not to be taken literally. But there is more sober testimony: it is implicit in Cicero's evaluation of the comparative

⁷⁰ Settefinestre: Carandini (1985). For some newly studied examples, see Giancola near Brundisium (Cambi 2001) and Termito near Heraclea (De Siena and Giardino 2001: 153–6; this was allied territory). [[See further, on villas in central Italy, Marzano (2007); her figure 19 (p. 200) summarizes the changes over time.]]

⁷¹ BC i.27.121–4. Most of the *complures coloniae* of C. Gracchus referred to in Livy, *Per.* 60, did not materialize.

⁷² See Brunt (1988: 240–41).

⁷³ Idem (1971: 255–9, 589–601).

⁷⁴ Shatzman (1975: 34). For some further evidence see Aubert (1994: 162 n. 153). Cf. Crawford (1977b: 48–9). E. Rawson (1976: 90–91) (and 1994: 446–7) perversely attempted to deny the evidence that refers to senators (arguing inter alia that *II Verr.* v.45 means that it was illegal for senators to own land in the provinces; but the obvious meaning is that the *governor* of a province was not meant to own property there; cf. iv.9). Non-senatorial Romans farming in Narbonese Gaul in the early first century: Cicero, *Quinct.* 12.

⁷⁵ Cicero, *Orator* 232.

standing of investments that *mercatura* could produce very healthy results even from the point of view of a well-to-do senator.⁷⁶

Between the wealthy few and the propertyless poor lay other groups. One will have consisted of more or less prosperous farmers, some of them farming with slave labour, others, definitely poor (*pauperculi*), 'with their own children'.⁷⁷ De Ligt has rightly stressed the stratification of the peasant population.⁷⁸ Town professionals, artisans, and shopkeepers will have run the whole range from near-wealth to grinding poverty. It is not clear that any of these groups had any shared experience in the late Republic. Some people certainly prospered, especially in towns; at the top end they will often have been town-councillors, or prosperous freedmen such as the late-republican *sagarius* (cloak-merchant) Sabbio whose residence at Capua was excavated not long ago.⁷⁹ But one's livelihood could be insecure: a mistake or ill luck and you could lose your land. One scholar has estimated that no fewer than 130,000–150,000 veterans were settled in Italy between 47 and 14.⁸⁰ The dire insecurity that resulted is to be heard in Vergil's *Eclogues*, literary conventions notwithstanding.⁸¹

We have no way of knowing how many people lived at a subsistence level or sank below it. But we do know that some provinces were severely exploited by Rome and its officials, that child-abandonment was commonplace in many regions, and that the poor had no economic safety-net. In the countryside, in particular, the job opportunities for the landless man were seasonal and sporadic, and in towns they will also have been grim: these *mercenarii* and *obaerarii* were at least as vulnerable, economically, as the worst-treated slaves. None of this is likely to have changed much during the century we are considering.

In these conditions we may regard the introduction of tenancy as an improvement—it at least allowed free men to make a livelihood on the land. It is first known from the lost writings of Saserna,⁸² father or son, probably in the early first century.

LABOUR

The conditions of labour, at least in the central parts of the Roman world, were dominated by slavery. The form of labour relations might vary (according to Varro, there were still indebted serfs, *obaerarii*, in 'Asia', Egypt and | Ill-yricum),⁸³ but chattel slaves were always a key element. Slave numbers are

⁷⁶ *De off.* i.151. ⁷⁷ Varro, *RR* i.17.2.

⁷⁸ De Ligt (1990: 49–56). ⁷⁹ Pagano and Rougetet (1987).

⁸⁰ Keppie (1983: 127). ⁸¹ E.g. *Ecl.* i.3, 11–12, 70–71, ix.4–6.

⁸² Quoted by Columella i.7.4; see De Neeve (1984: 40–62, 91–2, 124).

⁸³ *RR* i.17.2 (with Lo Cascio 1982). Aubert (1994: 130–31) seems too sceptical on this point.

admittedly even more elusive than those of the free population. In 167 the slave-market had absorbed 150,000 new Epirot slaves without difficulty; Caesar's Gallic wars overshadowed this effort, producing more than 400,000 prisoners.⁸⁴ Yet there was no hint of a glut. My guess is that in the very late Republic there were always four to eight million slaves and serfs in the Roman Empire; but no accurate figure is obtainable.⁸⁵ Cato and Varro explain in detail how to make the best use of slave labour on the land. Tenant farmers might also own slaves. Slaves made up a large proportion of the skilled craftsmen of republican Italy.⁸⁶ Wealthy first-century Romans, accustomed to owning a number of residences, numbered their domestic servants by the hundreds (and if there were 12 million free people in Italy in 31 BC, comparative figures suggest that there may have been two million or more domestic servants).⁸⁷ Slaves could already possess or could receive education, and during the second century they probably came to dominate the managerial level of the Roman economy still further, working as *vilici* (estate managers), *actores* (financial managers), and private secretaries. The logic of this system is obvious: the owner has far more power over his slave subordinate than he could ever have over a fellow-citizen.

It is futile to discuss whether slave labour was 'efficient': we are in no position to second-guess the slave-owners on this point. It may be sufficient to record the surprisingly candid view of a historian of economic growth: the underlying advantage of technological improvement is that it allows a nation 'to control and manipulate nature and people for productive ends'.⁸⁸ Slavery did that quite well, and it did not prevent its victims becoming, in selected cases, consumers.

While avoiding the common tendency to soften the life conditions of Roman slaves, we should pay attention to the very noticeable differences. Many were violently mistreated: chain-gangs and vicious punishments, including execution on the mere say-so of the owner, were commonplace. Cato lists the work which farm slaves ought to do on 'holidays'. Child slaves could be put to work at an early age. Though it has been suggested that eventual freedom was the prospect of large numbers of slaves, and manumission was indeed a regular part of the system which probably grew commoner in the late Republic, the evidence for readily available manumission is insufficient,⁸⁹ and it was ordinarily available only to those who were judged to be especially meritorious—

⁸⁴ Velleius ii.47 (with the reservation implied in n. 10).

⁸⁵ For the overall total cf. Harris (1999: 65) [[above, p. 92]].

⁸⁶ Cf. Morel (1983: 25–6).

⁸⁷ Cf. Cipolla (1993: 66) for domestic servants as a percentage of total population in Italian cities, 1448–1696.

⁸⁸ Mokyr (1990: vii).

⁸⁹ See Wiedemann (1985); in my view, Nicolet (1994: 605) has this wrong.

which excluded the average farmhand, porter, and quarry-worker. But slavery was a legal, not an economic, category, and the most vital question concerns 'low-wage' labour, whether it was slave or free.

Wage-labourers (*mercennarii*), who were almost equated with slaves by upper-class authors,⁹⁰ were often still worse-off economically, as already mentioned: on the land they were often seasonal labourers, hired for hay-making or the harvest or the vintage.⁹¹ None of this will have changed much in late-republican times.

It is only recently that the work of Roman women has emerged from the historiographical shadows,⁹² and much remains unclear [[see Chapter 4]]. As in most traditional societies, they will have worked at cloth- and clothing-production (but the slave-owner, even in Cato's time, was recommended to go to market to buy clothes).⁹³ In towns, women had more economic possibilities than in some other pre-industrial worlds, such as classical Athens. On the land, peasant women undoubtedly joined in special outdoor tasks such as the vintage, and probably did other outdoor work as well in many regions—which ones exactly, it would be worth trying to define.⁹⁴ Slave women were probably outnumbered by the males, especially on large slave-farmed estates, though perhaps less heavily so as our period progressed; here their work will mainly have been in and around the house.⁹⁵

As to the experience of work, no one, it seems, attempted to calculate work by the hour, there being no mechanical clocks, but that no doubt often meant toil from dawn to dusk (before dawn is when the peasant Simylus gets up in the *Moretum*). It may have been within our period that an agronomist, namely Saserna, first propagated the notion that certain agricultural tasks ought to be accomplished in a fixed number of days. There were holidays, but they affected different classes in different ways: on festive days Simylus works his garden.⁹⁶

⁹⁰ Harris (1988: 608 n. 29) [[above, p. 22]]. [[On the meaning of the term *mercennarius* see Mascone (2009: 121–2).]]

⁹¹ Varro, *RR* i.17.2. He recommends using *mercenarii*, not slaves, in unhealthy districts. See further Treggiari (1980), De Ste. Croix (1981: 179–204).

⁹² See Scheidel (1995–96), Dixon (2001: esp. 113–32).

⁹³ Cato, *De agric.* 135. Columella xii.3.6 assumes that the clothes for ordinary slaves will be purchased.

⁹⁴ Cf. Scheidel (1995–96: 47.210–11; 48.2). The best testimony might appear to be the *Moretum*, in which the poor farmer's wife seems not to work in the fields (119–24), but the literariness of the whole work must put us on our guard (cf. Horsfall 2001). For Illyricum see Varro ii.10.7.

⁹⁵ Harris (1999: 69–70) [[above, p. 99]]. Scheidel (1995–96: 3) misreads Columella xii.3.6 on this subject.

⁹⁶ Saserna and the days per task: Varro, *RR* i.18.2 and 6; cf. Columella ii.12.7 and Kolendo (1980: 48–50). Simylus in the garden: *Mor.* 67–9.

CAPITAL AND CAPITALISM

One scholar has suggested that we might call the developed Roman economy a 'capitalist market economy without factories',⁹⁷ but experts on | capitalism and experts on Rome have on the whole been very reluctant to bring the two concepts together. It is all too obvious that even the capitalism of the nineteenth century differed greatly from the Roman system.

There were rich people regularly on the look-out for good investments, and people who helped them; conversely, a reputable borrower could borrow on a very large scale.⁹⁸ Much of the borrowing will have been conducted through patrons and friends, but less so probably as our period progressed. Such relationships were *not* what brought Brutus and the Salaminians together, or the late-republican Cloatii with the people of Gytheum to whom they later generously forgave their 48 per cent annual interest.⁹⁹ A banker such as Pythius of Syracuse could have such wide contacts that he was said to be 'apud omnes ordines gratus', 'esteemed by high and low alike'.¹⁰⁰ And Andreau has established that there were loans for productive purposes as well as for consumption.¹⁰¹

In a capitalistic system, investment is supposed to be guided by expectation of returns, without inhibitions (the real world is more complicated). Members of the late-republican elite show no sign of embarrassment about large-scale money-lending. Even when Cicero is ranting on moralistically in a philosophical work, the only kind of lending he pretends to disapprove of is extortionate lending to provincials through freedmen.¹⁰²

What differentiates the late-republican Roman system from a simple form of capitalism was not that it lacked markets in capital, in goods, in land, or even in labour, for it did not, but that its urban production was carried out by households rather than firms.¹⁰³

CONSUMPTION AND LIVING CONDITIONS

We can consider this matter from both a macro- and a micro-economic direction, from the point of view of aggregates and from the point of view of

⁹⁷ Millar (1981: 73); cf. Love (1991).

⁹⁸ We have been told that capital markets 'were almost entirely absent from the ancient world' (Millet 2001: 24). It depends what you mean by a capital market, but this is more false than true.

⁹⁹ *SIG*³ 748.

¹⁰⁰ Cicero, *De off.* iii.58.

¹⁰¹ Andreau (1999: ch. 12). But there may not have been enough productive outlets for capital (cf. Braudel [1979]1982: 248; Pomeranz 2000: 179).

¹⁰² Cicero, *Paradox.* 46.

¹⁰³ Cf. Persson (1988: 68) on the medieval European economy.

households. Aggregates are admittedly all a matter of conjecture, and the consumption choices of individuals are also hard to get at.

It makes little sense to divide Roman commodities into 'luxuries' and 'staples'—there were far too many major items that were neither one nor the other.¹⁰⁴ But there were of course luxuries recognized by the Romans as such. It was Pompey's defeat of Mithridates, we are told, that first turned Roman customs to pearls and precious stones; and the surviving jewellery can make a vivid impression, for instance the items made of gold buried in a house on Delos in 88 or 69.¹⁰⁵ The late Republic sustained a lively trade in works of art.¹⁰⁶ The 50s, apparently, were the years when rich Romans acquired a taste for the use of marble in private houses.¹⁰⁷ On the other hand there were still sumptuary laws, and some real hostility may have been felt towards luxury spending.¹⁰⁸

But let us turn to everyday life, beginning with cereals. In medieval and early-modern Europe, according to a widespread view, 'the lower orders lived in a chronic state of undernourishment and under the constant threat of starvation',¹⁰⁹ and that may be what we should expect to find in the Roman Empire. We suppose after all that in any given Mediterranean region the wheat crop failed at least one year in every four. Recent scholars have argued that shortages of grain were very common in the late-republican city of Rome¹¹⁰—but they have largely been looking in the wrong place. The capital was obviously subject to serious distribution problems—and people died of starvation there if civil war cut off supplies.¹¹¹ But Italy was relatively well-off, and chronic and severe malnutrition must have been commoner in the less-talked about world of the provinces. In Sicily, the tithe exacted by Rome must sometimes have caused serious shortages. Garnsey has argued that in the late Republic some three million *modii* of wheat came as tax from Sicily in an average year, perhaps some eight million from

¹⁰⁴ Harris (1993b: 12) [[below, p. 289]].

¹⁰⁵ Pliny, *NH* xxxvii.12. Delos: the exact date is unclear—see Siebert (2001: 133–47) (most of it came from Syria).

¹⁰⁶ Coarelli (1983), Galsterer (1994).

¹⁰⁷ Pliny, *NH* xxxvi.48–50.

¹⁰⁸ When the censors of 125–124 expelled a consular from the Senate for spending too much to rent a house (Velleius ii.10.1, cf. Valerius Maximus viii.1 *damn.*7), that was a pretext. But the censors of 97–96 expelled the tribune Duronius (Broughton, *MRR* ii.7) because he had repealed a sumptuary law. By the end of our period, it may be that only extreme extravagance was criticized (cf. Sallust, *Cat.* 7.4, 13.1)—but there were at least two more sumptuary laws between Duronius and Caesar's dictatorship, and Pompey proposed one in 55 (Cassius Dio xxxix.37). Gabba (1981: 552–5 = 1988: 37–41), in the wake of Daube, explains these laws rationalistically as self-protection on the part of the elite. See further Gowers (1993: 70–73).

¹⁰⁹ Cipolla (1993: 23).

¹¹⁰ Virlouvet (1985), Garnsey (1988: 195–217), Cherry (1993) ('food crisis... is attested about one year in four', p. 433).

¹¹¹ Actual starvation in republican Rome seems only to be attested during the war against Sex. Pompeius (numerous deaths, Cassius Dio xlviii.18.1), but the sources may very well have missed something.

'Africa'.¹¹² Three million *modii* would have weighed on average 20,460 tons, and hence at a reasonable net yield of 400 kg/ha would have corresponded to the entire production of some 51,150 ha.; no more than half a million of Sicily's 2.5 million ha can be supposed to have been under grain cultivation at any given moment.¹¹³ Even in good years, Roman exactions must have been burdensome for the places most affected (they were not shared equally), and during slave rebellions and after bad | harvests, the effects will have been dire. In short, the extraction of large quantities of grain from Sicily, Africa, and Sardinia must sometimes have had very negative effects there.¹¹⁴

Since there is no space to consider all other significant commodities here, we may concentrate on five especially important ones, olive oil, wine, metals, slaves, and textiles.¹¹⁵

Consumption of olive oil must have been noteworthy in all the provinces that existed in 31 BC except Gallia Comata, as well as in Italy.¹¹⁶ It has been supposed that average consumption in the Mediterranean parts of the Roman Empire is likely to have been about 20 litres a year per head.¹¹⁷ Cato's ration for farm slaves was one *sextarius* a month,¹¹⁸ equivalent to 6.47 litres a year, but that was in a production area. Even if consumption was only at the level of five litres a year in a population of, say, 25 million—a quite conservative guess—that would have required 125 million litres a year, which would have been the product of, say, 34 million trees or the contents of 5.68 million amphorae¹¹⁹—impossibly high numbers, one might say. Yet the dossier of olive oil trading intensifies greatly in the course of the late Republic.¹²⁰ Much the most interesting number we have

¹¹² Garnsey (1988: 182).

¹¹³ However, Coarelli (1981: 13), following Scramuzza, conjectured that there will only have been about 250,000 ha under grain each year. For the weight of a *modius* of wheat see Rickman (1980: xiii). I am assuming alternate-year fallow (with Morley 2001: 56). Note that there were normally compulsory purchases in Sicily in addition to the tithe (Garnsey 1988: 200; Duncan-Jones 1990: 147).

¹¹⁴ C. Gracchus insisted that some Spanish communities be paid for their grain, Plutarch, *CG* 6; [[Garnsey (1988: 197) says this was 'the end of an era', which is too optimistic.]]

¹¹⁵ This selective approach runs the risk of simplifying an increasingly complex economy. Ideally we would also consider the full range of consumption choices, services as well as commodities.

¹¹⁶ At Rome itself it was certainly considered, by 74 BC, to be an essential commodity: Pliny, *NH* xv.2. There were parts of other provinces besides Gaul where little oil was consumed: see e.g. Strabo iii.155 on inland Spain.

¹¹⁷ Mattingly (1996: 239). It has been argued that in classical Attica oil consumption had been at the level of between 15 and 28 litres a year per head (Amouretti 1986: 177–96; she included two to three slaves per family).

¹¹⁸ *De agric.* 58.

¹¹⁹ In truth, the matter of average yield is obscure. The best discussion known to me is Mattingly (1994b), but the figure of 5 kg of oil per tree used here is my own extrapolation. Late-republican amphorae: Peacock and Williams (1986: 52) give the capacity of Dressel type 1B as 22 l.

¹²⁰ Two of the earliest surviving dedications by specialist merchants at Delos were made by the oil-dealers, in the 90s: see Durrbach, *Choix* 141, *ILLRP* 344. There are ample signs of Italian exports in this period: Strabo v.214, Pliny, *NH* xv.3. But much is obscure; cf. Lafon (1993).

concerns Caesar's exaction of three million pounds (one million litres) of olive oil a year from Leptis.¹²¹ That means that the Leptitani possessed at least 273,000 olive trees (much of whose product they must previously have been exporting). It also means that they had a fairly reliable market share and that someone had invested heavily.

Wine consumption in the city of Rome has been analysed well by Tchernia, who estimated consumption in the range 146–182 litres per head per annum, having increased, so he argued, in the course of the second century.¹²² Once again, rural consumption is a conundrum. Cato recommended something like 200 litres a year, sometimes mixed with | sea-water (!), for his in general harshly-treated farm slaves, once again in a producing region.¹²³ It is difficult at all events to imagine that empire-wide consumption was less than 10 million hectolitres a year in the late Republic. Production probably increased notably during that period, for the export of wine-filled Dressel 1 amphorae from Italy to Gaul and Spain was only beginning in 133, and the market continued to grow;¹²⁴ it will have been damaged, obviously, by Caesar's massacres in the 50s.

If demand for wine is hard to measure, aggregate demand for metals is a real mystery.¹²⁵ But the Greenland ice-cap shows that copper production increased sharply, and several general considerations suggest that this will have been true of all other metals. Better-capitalized agriculture was one factor, and sources of ore improved as imperial power expanded. An underlying trend was leading towards the world of Flavian Pompeii, which teemed with metal household vessels and utensils of every kind, with metal implements and tools, with statuary, with locks, nails, water pipes—and so on.¹²⁶ Now merchant ships carrying metals are as common in wrecks of around 100 BC (cf. Table 11.1) as they were around AD 79. Arms-makers must have made fortunes during the civil wars of 49–30. When wrecks are well preserved, they tend to be rich in metal artifacts: in the fairly modest Valle Ponti wreck, for instance, were found lead ingots, bronze strainers, metal ladles, baking pans and plates, metal boxes and clasps, votive models made of lead, carpenter's tools, fish-

¹²¹ *Bell. Afr.* 97; for the equivalence see Frank (1933: 193).

¹²² Tchernia (1986b: 21–7, 58–60).

¹²³ *De agric.* 57; cf. Tchernia (1986b: 24).

¹²⁴ Gaul: Laubenheimer (1993: 59–61). Spain: Nolla and Nieto (1989: 381).

¹²⁵ The two most interesting early-imperial sites, Pompeii and the town on the Magdalensberg, have been no more than marginally helpful, at least so far, for the republican period. For metal artifacts at Pompeii see esp. Frederiksen (1970–71: 353). The occupation of the Magdalensberg site began about 50 BC (Schütz 2002), but how many of the metal finds go back to the earliest years is unclear. For Aquileia cf. Nonnis (1999: 86–7). For a peak in lead production in the area of the Roman Empire very roughly around the end of the first millennium BC, detected through lake sediment in Sweden, see Renberg et al. (1994). By means of a peat bog in Switzerland, Shotyk et al. (1998).

¹²⁶ No publication gives a full account of this matter, but see esp. Gralfs (1988) and Ciarallo and De Carolis (1999).

hooks, a bronze balance, a gridiron, strigils, a sword, and an iron anchor.¹²⁷ Yet the history of the metallization of the Roman economy has still to be written.

The numbers of slaves we have already mentioned (p. 275) will give some impression of the demand for new slaves. At the end of the Republic it will have been in the hundreds of thousands a year, Empire-wide.¹²⁸ It was probably in this period that someone coined the Greek word *statarion* for a specialized marketplace given over to slave-dealing.¹²⁹ Yet it is not certain that the demand for market-purchased slaves was continuing to rise at the very end | of our period, for slave reproduction may have gained some importance (though of course one who was born into slavery might easily be sent to market).

As for textiles, while some poor people in the country dressed in skins, and linen was also a factor, most people dressed in wool. The evidence as to whether demand shifted from wool to cloth to clothing as urbanization intensified is confusing. According to one account, there was no kind of 'mass market' for clothing in the Roman world, except for the military market.¹³⁰ That there was no kind of mass *production* is obvious, but as we have already seen family autarchy was not the only alternative. In a well-to-do republican household, the family's cloth and clothes were made by the slaves,¹³¹ whose own garments will have come from specialized suppliers.¹³² As for the less prosperous, we can only guess—the urban/rural divide may have been crucial, with country women most likely producing their own cloth as well as their own clothing. The topic remains wide open for some informed speculation.

DISTRIBUTION AND TRADE

This is not the place to criticize Horden and Purcell's recent revival of a purportedly Polanyi-esque view of exchange in the ancient world,¹³³ all the less so (a) because it is unclear how much they would disagree with the claims made in this chapter, and (b) because I have no wish to deny the social 'embeddedness' of the transactions alluded to here. Insofar as these authors

¹²⁷ Parker no. 1206, 25–21 bc. On the variety of objects recovered at the Magdalensberg: Schütz (2002).

¹²⁸ Harris (1980a: 121) [[above, p. 68]], (1999: 75) [[above, p. 107]]. The best explanation of the presence of so much late-republican coinage in Romania is still that the region exported slaves to the Romans (Crawford 1977a).

¹²⁹ The earliest instances are in *I.Magn.* 240 and in *MAMA* vi.260.

¹³⁰ Frayn (1984: 154, 163).

¹³¹ Cf. Asconius, *In Milonianam* p. 38 Stangl = p.43 C.

¹³² Cf. Varro, *RR* i.2.21 for weaving shops on large estates.

¹³³ Horden and Purcell (2000 *passim*, esp. 606). See Harris (2005a). Polanyi's actual view of the Roman economy (1977) was an alarmingly 'modernist' one based largely on Rostovtzeff.

deny us the right to use the terminology of modern economics, they seem wholly misguided (and this activity is no barrier to studying the conceptual world of the late-republican Romans). But the real disadvantage of the Horden—Purcell immobility model is obviously that makes it difficult to grapple with good evidence for change. The remains of some 220 wrecks of Mediterranean merchant ships (or redistribution ships) are known from our period (a selection of them is described in Table 11.1)—whereas many earlier and later one-hundred-year periods have produced hardly any.¹³⁴ The inscribed objects found on these shipwreck sites bear the names not of officials or plutocrats, with one or two exceptions, but of obscure individuals, who are none other than traders of one kind or another. In short, Mediterranean trade accelerated rapidly in the mid-second century.

It should also be considered significant that Roman trade included inexpensive goods that could easily have been substituted for locally in most places, such as commonplace black-glaze pottery (see Table 11.1 again), wax, and honey.¹³⁵ The implication is that transport was efficient, that part of the economy at least was organized on the basis of trade, and that an entrepreneurial spirit was widespread.

To what extent peasants or pastoralists operated in a ‘natural’ economy that was separate from the market economy is a delicate question. No doubt there were gradations, and the problem cannot be solved by reference to literary sources or to comparative material. It is suggestive, but nothing more, that amphorae were rather widely diffused far from their place of manufacture.¹³⁶ Further enlightenment could only come, I think, if we could establish a better typology of country-dwellers.

TRANSPORT

The notion promulgated by C. A. Yeo that land transport was never commercially viable under the Roman Empire except for small-scale luxuries has largely given way to the realization that even quite bulky commodities constantly travelled by road when the market existed.¹³⁷ When both were available, water-transport cost less—hence the interest of all Roman agronomists in whether a farm has navigable water nearby. But Cisalpine pork must have

¹³⁴ Horden and Purcell (2000: 371), based on Parker (1992).

¹³⁵ Strabo iii.144.

¹³⁶ For the distribution of Dressel 1 amphorae see Panella (1981: 56–7), reproduced as Tchernia (1986b: map 4). What is most striking perhaps is their diffusion in Gaul away from the great rivers.

¹³⁷ Meiggs (1982: 339–46), Hopkins (1983a: xx), Spurr (1986: 144–6), Sippel (1987), Harris (1993b: 27–8) [[below, pp. 309–10]], Laurence (1999: 95–108). See also Horden and Purcell (2000: 377).

come to Rome on the hoof, and as for land transport in Italy, 'their roads can carry boat-loads'.¹³⁸ If demand was strong enough, in fact, the costs of land transport could be accepted. Not that we shall want to ignore the system's technological limitations.

We are certainly not faced with full technological inertia in this sector. Ships' pumps are a clear-cut innovation (Table 11.2).

Larger merchant ships were to be seen in the western Mediterranean.¹³⁹ But what made most difference may have been the further spread of high-quality roads, most of all in Italy but also to some degree elsewhere (Via Popillia 132, Via Egnatia c.130, Via Domitia c.120, etc.).¹⁴⁰ |

PRODUCTION

The crucial question here is productivity,¹⁴¹ and the most obscure variable is technological improvement, or rather the diffusion of technological improvements. What did it really amount to? It has been claimed that the Romans learned much about agricultural production from Greeks,¹⁴² but it is hard to say precisely what they learned. The Roman rich have a rather bad reputation with the moderns—they were interested in social status more than in investment, and never gave any thought to more efficient means of production. But this stereotype is inaccurate. The only Punic literary work which the Romans kept for themselves after they had destroyed Carthage was the 28-volume farming handbook of Mago: the Senate had it translated.¹⁴³ Varro, admittedly not a typical landowner, specifically favours rational experimentation.¹⁴⁴ Poseidonius caused some shock to Stoic philosophers by suggesting that technological innovators of the past had actually | displayed 'wisdom'.¹⁴⁵ To take all this as posturing would be the merest prejudice.

¹³⁸ Strabo v.235. Varro, *RR* i.16.6, seems just as interested in road transport.

¹³⁹ Few ordinary merchant ships exceeded 400 tons burden, in order to limit risks (the Albenga wreck may have carried 500–600 tons: Parker 1992: 50). Many vessels carried 20–40 tons and no doubt stuck as close to shore as possible. On the capacity of such cabotage for shifting large quantities of goods, see Horden and Purcell (2000: 140). On the rather high quality of the best ships, such as the one wrecked at La Madrague de Giens, see Pomey (1982) (for a comparison with what was possible in the seventeenth century see p. 153 n. 37).

¹⁴⁰ See Map 11.2. But it is important to consider the whole network, not just the famous long-distance roads. For the date of the Via Egnatia, see *AE* 1973, no. 492.

¹⁴¹ Horden and Purcell (2000: 269) were ill-advised, I think, to belittle this concept. Cipolla (1993: 97–108) offers a better example.

¹⁴² Nicolet (1994: 612).

¹⁴³ Pliny, *NH* xviii.22; see also Varro, *RR* i.1.10, Columella i.1.13.

¹⁴⁴ *RR* i.18.8.

¹⁴⁵ Fr. 284 E–K, from Seneca, *Ep.* 90, who comments (s. 21) that modern cultivators also think of many ways of improving yields.

Table 11.2. Diffusion of technological improvements, 150–1 BC*

Sector	Innovation	Type of evidence	Date	Reference
construction	<i>pozzolana</i> concrete	physical remains	mid-2nd c.**	J.B.Ward-Perkins (1970: 246)
merchant shipping	ships' pumps	shipwreck remains	late 2nd c.	Parker (1992: 28)
agriculture	iron ploughshares (in Italy) (but there are only two of them)	physical remains vs. Cato	late 2nd or early 1st c.	Frederiksen (1970–71: 352)
luxury eating	oyster beds	literary	early 1st c.	D'Arms (1970: 18–19)
food-production	wedge press	physical remains	early 1st c.	Reger (2007: 479–80)
dyeing	blue dye	Vitruvius vii.11.1	2nd quarter of 1st c.	
glass-making	glass-blowing	physical remains	mid-1st c.	Newby and Painter (1991)
construction	<i>opus reticulatum</i> (in Italy)	physical remains	mid-1st c.	Torelli (1980)
food-production	water-mills	Strabo xii.556 suggests some diffusion in E provinces	from mid-1st c.	Landels (1978: 16–21)

*This table can be no more than illustrative, since so many changes are undatable.

**‘This was not a sudden, dramatic discovery... each generation add[ed] its quota of practical experience until, by the last century of the Republic...’ (J.B. Ward-Perkins 1970: 246).

There were technical advances (see Table 11.2), but it will readily be admitted that none of them is likely to have made any radical economic difference within the period we are now considering. It gives the wrong impression to say that widespread literacy assisted technology transfer;¹⁴⁶ it may be true by ancient near-eastern standards, but by modern standards literacy was very limited, and even when the literate changed their methods of farming or building, it can seldom have been because of what they had read.

There must always have been places that were well-known for this product or that, but a feature of the late Republic suggests at least the potential for economic growth: certain towns grew famous for particular kinds of manufactured goods (they were no longer all-purpose ports or market-towns); one thinks of ironmongery at Puteoli, for example, of ship-building at Gades, of Patavium and woollen clothing, Arretium and red-glazed pottery.¹⁴⁷

ECONOMIC ORGANIZATION

It would require a separate chapter to explore the full implications of the family, manumission, friendship, *clientela*, the partnership, and the *collegium* for the economic life of the late Republic. Three propositions may be offered. (1) The family—in the Roman sense, that is to say, with freedmen and slaves included—became a more flexible economic instrument in the second and first centuries in virtue of the legal developments already described. Thus the rich could more comfortably entrust their business affairs, which senators at least were supposed to keep at arm's length, to freedmen and slaves. Modest artisanal production was also to a large extent in the hands of *familiae*.¹⁴⁸ (2) The partnership (*societas*) was therefore less needed than it might have been, but in any case it gained more importance in the late Republic, and not only because of the growing power of the *societates publicanorum*. Witness among other things the presence of the *Societas* of the two Pontilienus brothers, engaged in sending ingots of lead from Spain to Rome, as we see from two shipwrecks (Agde J and Mal di Ventre: Table 11.1).¹⁴⁹ (3) The full economic effects of extra-legal *fides*-based | social relationships in the late Republic still need to be explored. People relied on each others' loans and on their expertise, for example in dealing with real property.¹⁵⁰ Should such ties be seen as a

¹⁴⁶ Greene (2000: 44).

¹⁴⁷ Puteoli: Diodorus Siculus v.13. Gades: Strabo iii.168 (cf.140). Patavium: v.213. For the beginning date of Arretine ware 40 now seems to be the canonical date: Oxé et al. (2000: esp. 37).

¹⁴⁸ On slave managers: Aubert (1994). Artisan production: Morel (1983: 30, 35).

¹⁴⁹ Either one of the dates is wrong, or modern ideas about the short-lived nature of Roman *societas* are exaggerated (incidentally, the name Pontilienus is also probably to be understood in ILLRP 777 from Cartagena).

¹⁵⁰ Consider e.g. the help Cicero had from Vestorius, Att. xiv.9.1, 10.3, 11.2.

backward substitute for institutions, or a sophisticated way of doing without them?

GROWTH

We glanced earlier at some of the conceptual problems, and decided to concentrate on the area which constituted the Roman Empire at the beginning of our period. If we were going to discover whether per capita GDP in this area increased over the following century, we would have to average the experience of very diverse regions: one scholar has concluded that, for the eastern provinces, the late Republic 'was probably catastrophic with regard to the prosperity of the native populations'.¹⁵¹ On the other hand, the copper residues in the ice of Greenland show that there was a major increase in production,¹⁵² which powerfully suggests overall growth.

This chapter has shown that there were fewer serious obstacles to growth than is often supposed. It is true that if you make a comparison with the 'first modern economy', seventeenth-century Holland,¹⁵³ one striking difference is the poor supply of information in the Roman world, which must have meant high transaction costs. Very limited literacy and no printing, combined with some rather long distances, made investing and trading very hazardous, even at times when there was no war and little piracy. But while it is common to cite the social elite's lack of interest in mechanical improvement as another impediment, it did in fact show some interest in the rationalization of what it understood, for example law: it was in these times that Rome developed a law of agency.¹⁵⁴ The most serious mental obstacle was a system of social prestige which deplored greed.

But were the necessary positive factors present? The most important are commonly thought to have been capital accumulation (to which we should add: willingness to engage in productive investment), growth in population, and the diffusion of technological improvements.¹⁵⁵ Let us take these in reverse order.

Some technological improvements did spread, but it must be doubted whether their impact was great.

¹⁵¹ Andreau (1999: 134).

¹⁵² Hong et al. (1996).

¹⁵³ Described by De Vries and Van der Woude (1997).

¹⁵⁴ On the importance of which cf. North (1990: 126).

¹⁵⁵ See e.g. Todaro (1997: 105); cf. Mokyr (1990), Millett (2001), and, on China, Deng (2000). Others emphasize investment in human capital (Becker 1993), or (Sylla 2002) the desirability of sound financial systems.

Malthusian checks probably held down the population of the most exploited provinces, but Roman citizens were very fertile (if Lo Cascio is | right), and the total population of the empire as it was in 133 probably grew.

Capital was the real problem. It was serious enough that Rome's rulers showed virtually no interest in human capital or popular education (even Greek cities drew in their horns), and negative enough that raising liquid capital often depended on the vagaries of personal relationships. What makes it impossible to suppose that there was much ultimate economic growth in this period is the sheer destruction of fixed capital—and of people—in the civil wars.¹⁵⁶

NARRATIVE

Archaeologists have been struck by the evident prosperity of the best-preserved Italian towns (Aquileia, Pompeii) in the last two decades or so of the second century.¹⁵⁷ There were, on the other hand, signs of unease, even in Italy: for instance some 4,000 slaves had rebelled at Sinuessa in 141.¹⁵⁸ In the last years of the second century, the Gracchan reforms having been undone, plenty of free Romans and Italians were unemployed, even though much of the economic misery was being shifted to the provincials.

Then came the Social War of 91–89, involving hundreds of thousands of men,¹⁵⁹ destroying great quantities of fixed capital, disrupting production and trade, and draining the treasury (which was not necessarily a bad thing). There ensued Mithridates' invasion of the Aegean provinces, a serious debt problem at Rome in 86, the Sullan war in Italy, and then Sulla's colonization, the largest single disruption of rural life in Italy for over a century. Spain and Italy suffered seriously from war during the 70s.

The numerous signs of more or less intense social malaise in the late Republic are to a great extent attributable to the failure of the Roman elite to recognize and address the various economic problems that afflicted Rome, Italy, and the provinces.¹⁶⁰ The potential for modest economic growth was

¹⁵⁶ Between 49 and 30, Italy and every province were the scene of warfare or at least of special exactions. On the vulnerability of fixed capital in a pre-industrial economy, see Cipolla (1993: 80–91).

¹⁵⁷ See Verzar Bass (1983: 209–12) and Oleson (1996: 73) (cf. Frank 1933: 288, etc.), respectively. Rome's recent wars had been fought elsewhere, and Asia Minor now contributed regularly to the imperial revenues. At Pompeii it was evidently the Social War that changed things.

¹⁵⁸ Orosius v.9.4 (the apparent date).

¹⁵⁹ Brunt (1971: 439) discusses the numbers involved.

¹⁶⁰ For an analysis of these problems, as they were experienced by the plebs in Rome itself, see Purcell (1994: 678–9).

there, and liquid capital seems to have been abundant. But then civil war returned again in 49, not to let up for more than a few months until 36. And while warfare probably acted in some ways as an economic stimulus (we need a new model of how this might have worked), there was no chance of overall growth until Caesar's heir reimposed internal order.

Between Archaic and Modern
Some Current Problems in the Economic
History of the High Roman Empire
(1993)

THE IMPERIAL ECONOMY*

The abstraction *homo oeconomicus* probably appeals to no more than a few historians,¹ but Roman men and women had economic lives, and while their forms of economic activity and organization may not be as incomprehensible as some of their other behaviour, these matters are difficult enough to understand and highly controversial. And it is not an arbitrary choice to study the Romans: we do it in large part because Rome possessed a great empire (which continued to grow spasmodically during much of the period under consideration here). At the beginning of this collective study of the Roman economy [[Harris 1993d]] it is desirable, partly because we shall be concerned with a number of phenomena that are local or regional in nature, to stress the imperial context, which endowed the Roman economy with some of its distinctive characteristics.

One product of empire was the very large city. Rome probably had a million inhabitants or not far short of that in the first century AD, Alexandria had very roughly 600,000. Eventually Carthage approached the size of Alexandria.² In

* This paper first appeared in Harris (1993d) = *Journal of Roman Archaeology* Supplement 6, 11–29, and is reprinted here by permission of *JRA*, with minor changes.

¹ ‘Classical man did not behave like economic man’, says Hopkins in an important essay (1983a: xiii), paraphrasing but also endorsing a Finleyan view; however that does not distinguish the classical age from any other. The species *homo oeconomicus* can only exist in the rarified atmosphere of academic economics, and even some economists are against the concept (see Leibenstein 1976).

² Rome’s population: Hodges and Whitehouse (1983: 49). Alexandria: Strabo xvii.798, Delia (1988). Carthage: Herodian vii.6.1 (referring to 238); but Kolb (1984) sees 300,000 as its maximum population.

pre-modern times it was very difficult and very extraordinary for a city to have a million or even half a million inhabitants: it was only after 1700 that the former territory of the Roman Empire included three cities with populations of 600,000 (Constantinople, Paris, and London), and it was only just after 1800 that the first European city reached a population of one million (London).³ Far below the population levels of the three great cities of the Roman Empire came an intermediate group consisting of Antioch, Pergamum, and Ephesus, each of which is likely for a time to have had more than 100,000 inhabitants.⁴ Then came many other 'cities' that had urban populations of, say, 3,000 to 30,000—| and then the majority of the population, which lived in smaller settlements or in the countryside.⁵ Two aspects of the demand that emanated from all these cities are especially important: firstly, the large cities of necessity looked to long-distance trade to satisfy their needs, and the mere fact that their inhabitants fed, clothed, and housed themselves, and in certain specific ways, has extensive implications. Secondly, the range of commodities which most cities imported: we should think less of what are misleadingly labelled 'staples' and 'luxuries' and more about the full range of commodities that a Graeco-Roman city of this era actually consumed in significant quantities.⁶

Anyone who doubts the importance of urban demand might start with Tchernia's already classic demonstration concerning the wine supply of the city of Rome itself. According to his fairly conservative estimate, the demand for wine at Rome is likely to have been on the order of 1.5 million hectolitres a year in the first century AD. Only a small proportion of that demand could have been met by vineyards near the city;⁷ in fact wine was imported to Rome

³ See Bairoch et al. (1988).

⁴ The population of Antioch can hardly be determined from Strabo xvi.750, who says that in 'size' it was a little smaller than Alexandria, but the urban nucleus is likely to have been about 400–450 ha (cf. *Princeton Encyclopedia of Classical Sites* s.v.; for a considerably larger estimate see Liebeschuetz 1972: 92), which in this case probably implies an urban population well above 80–90,000 (Liebeschuetz p. 96 argues for a much higher figure in the fourth century). The area enclosed by the walls of Ephesus was 415 ha., according to Beloch (1886: 231) (but *IGSK* XIII.951, so often cited for the population of Ephesus, is irrelevant: see Warden and Bagnall 1988). The figure of 180,000 for the population of Pergamum, derived from Galen (V, 49 Kühn, with Beloch 1886: 236), plainly includes the *chora*. Apamea had 117,000 *cives* in AD 7 (*ILS* 2683), but very many of them probably lived outside the city (cf. Beloch, p. 245); see Jones (1948: 8–10) for various other doubts about the validity of this figure. Europe in 1600 had eleven cities with populations above 100,000 (five of them in Italy); in 1700 thirteen; and in 1800 twenty-one (based on Bairoch et al. 1988).

⁵ The intractable problem of rural demand is discussed by De Ligt (1990; 1991).

⁶ More will be said about both of these matters in the *Cambridge Ancient History* vol. 11, 2nd edition [[Ch. 7 in this book]]. The big cities' need for imports was appreciated by Hopkins (1983b: 89). De Ligt (1991: 74 n. 126) was misguided to contest this on the grounds that our evidence about the populations of Alexandria, Antioch, and Carthage is not good, for there is no serious doubt that we have the order of magnitude right.

⁷ Tchernia (1986b: 21–7). Thus Rome consumed annually the product of well over 50,000 ha of vineyard; cf. Frier (1983: 257). Chaniotis (1988) has shown that Cretan exports to Rome were very substantial.

from many places that had access to the Mediterranean. An analogous story could be told about the wine supply of the city of Alexandria—and perhaps will be told one day when the amphorae have been fully studied.⁸ But even more vital is the point that there was urban demand for many other commodities without which the life of a reasonably prosperous Graeco-Roman city was practically unthinkable. It is becoming steadily more obvious that the complex patterns of Roman economic life included not only trade in government-subsidized staples and trade in goods of highly specific geographical origin, but also a large-scale trade in a considerable number of commodities, among which are to be included assorted foodstuffs, slaves, metal ores, and artifacts (perhaps the most neglected kind of commodity in writings about Roman economic history), textiles, timber, and the plant, animal, and mineral products which gave the Romans their dyes, paints, medicines, perfumes, and ornaments.⁹ Most accounts of the Roman economy give far too little weight to the wide range of traded commodities.

Another imperial aspect of the Roman economy is its huge geographical extent. [[...]] The Roman economy was emphatically not limited by the formal frontiers of the empire. Rostovtzeff's judgement that Roman commerce was a 'world commerce'¹⁰ is now regarded as hyperbole if not sheer fantasy, but it was not absurd, for the power of Rome cast a long shadow, and the area in which the Romans, in the widest sense of the term, carried on trade was vast, and in a sense larger, because of the slowness of transport, than it looks to modern eyes. In the mid-first century AD there was some demand, as the so-called *Periplus Maris Erythraei* demonstrates, for a merchant's guide, written in Greek, to the markets of the Red Sea, East Africa, and the west coast of India.¹¹ The northern frontier of the empire was also an active trading frontier, as the archaeological record makes abundantly clear.¹² And Dioscurides' handbook on *materia medica*, probably of Neronian date, assumes as a matter of course that the required substances will be drawn from an enormous area stretching from Spain as far east as India.¹³ This is the geographical context within which we ought to be working.

⁸ See meanwhile Empereur and Picon (1989).

⁹ Large sums of money could be involved in such transactions, as is vividly illustrated by a papyrus document of the mid-second century which refers to a single import shipment, the most costly known components of which were nard and ivory valued at 1,154 talents (probably equal to at least 6 million sesterces of imperial currency): Harrauer and Sijpesteijn (1985: verso col. ii, lines 27–9); cf. Casson (1986a). The papyrus being damaged, most of the cargo cannot be identified. Six million HS was more than the retail value of the grain carried by twenty large merchant ships.

¹⁰ Rostovtzeff (1957: 153).

¹¹ For the date see Casson (1989: 6–7), diverging somewhat from what he wrote in Casson (1984a: 39). Whitehouse (1991: 218) rightly observes that we run the risk of overstating the importance of Roman ships in the trade of the Indian Ocean; but few historians have succumbed to the (different) risk of overstating the importance of this trade for the Roman Empire.

¹² See esp. Eggers (1951), Godłowski (1985), Wolters (1990; 1991).

¹³ Dioscurides, *De mat.med.* i.6, 7, 18, 23, etc.

Meanwhile the nature of Roman imperialism changed, and we must enquire into the effects of these changes—the rapid growth in the size of the Empire continuing down to the last period of the life of Augustus, the brusque reining-in of imperial expansion after that date, its practical cessation after the conquest of Dacia,¹⁴ and through all this the evolving political relationship between the centre and the provinces. What were the economic consequences of these developments? Imperial expansion was generally a source of both capital and labour. Was the slowing down and ending of this expansion then the cause of a shortage of either? How did the relationship between Rome and the provinces affect the government's ability to raise sufficient tax revenue? Ultimately we need a more dynamic account of the Roman economy than can at present be provided.

THE DEARTH OF NUMERICAL DATA

It is tiresome to listen to ancient historians complaining about shortages of evidence, and sometimes there is an even more dire lack of imagination or of good historical method. However, it must be repeated—because there is so much wishful thinking to the contrary—that we are very badly handicapped by our inability to quantify any of the most vital aspects of the Roman economy. We are, for instance, profoundly divided about the role of slave labour, and this is in part (though only in part) because it has so far proved impossible to establish clear facts about the role of slave labour, and this is in part (though only in part) because it has so far proved impossible to establish clear facts about the dimensions of slave labour in almost any part of the Roman Empire. It is not only the numbers of slaves that are unknown: the most basic facts about demographic growth or shrinkage are unknown too; one might guess that in the areas that constituted the Empire by AD 14, there was a modest net population-increase over the next 150 years, but that guess could be wrong.¹⁵ Likewise, our knowledge of prices is pitifully slight, and there is no commodity at all for which we can establish even the roughest of price series, except to a certain degree in Egypt.¹⁶ Another important subject which we can only speak about in the broadest terms is the size of the Roman Empire's money supply, not to mention the speed with which it circulated. Yet another vital topic which remains hard to quantify is the economics of

¹⁴ On imperial expansion after Augustus, Isaac (1990) is essential reading. This is not the place to debate his conclusions.

¹⁵ On this subject see Duncan-Jones (1980), Pleket (1990: 55–70) (but I do not share the latter's apparent confidence that the early principate was characterized by strong population growth), and Frier (2000).

¹⁶ On grain prices see Duncan-Jones (1976), revised as ch. 9 of Duncan-Jones (1990). [[Rathbone (1997) subsequently showed that the Egyptian documents can provide usable price series for wheat, wine, and donkeys.]]

transport. We cannot of course measure productivity. And to add one more item to the list of important matters that are unquantifiable, long-distance trade itself is an area of great uncertainty: we can scarcely do more than guess at the volume of trade in any commodity, except for the wheat imported to Rome and the other big metropolises, not to mention the total volume of trade that flowed in any direction. As Hopkins has written, we are trying to reconstitute an 'unknown universe'.¹⁷

In recent times scholars have made some noteworthy attempts to circumvent the shortage of quantifiable information. Tchernia's argument (1986) about the demand for wine at Rome itself has already been mentioned. Hopkins's arresting papers 'Taxes and Trade in the Roman Empire' (1980) and 'Models, Ships and Staples' (1983) attempted to relate Roman trade to taxation by means of structural hypotheses which culminated in assigning hypothetical values to unknowns such as the gross product and the overall tax-rate imposed by the central government. The result is at least—and at most—thought-provoking.¹⁸ Another approach is provided by Duncan-Jones in his *Structure and Scale in the Roman Economy* (1990), which continues the author's earlier efforts to accumulate the numerical information that does exist about some aspects of Roman economic and social life, while criticizing Hopkins's theory about taxes and trade; it also attempts to apply a degree of statistical sophistication unusual among ancient historians to some of the few numerical data at our disposal, including some that relate to inscribed terracotta lamps, in the interests of denying that the Roman Empire 'formed a single integrated economy'.¹⁹

Can we do anything further about this dearth of numbers? We can count what we do have—and there is undoubtedly more to be done in this respect in the realm of *instrumentum domesticum*. We can demand that those who write about trade routes should at least consider whether those routes were truly used heavily.²⁰ And we should hypothesize more: what Tchernia did for the demand for wine in the city of Rome could usefully be done for metals,²¹ timber, and other commodities.

¹⁷ Hopkins (1983a: xxii).

¹⁸ Hopkins (1980; 1983b). The necessary order of magnitude of the Roman trade in basic foodstuffs seems to have led Hopkins to revise his views about the scale of Roman trade (1983b: 86). For some speculation about the necessary order of magnitude of the trade in slaves, see Harris (1980a: 117–18) [[above, pp. 57–61]]. Criticism of 'Taxes and Trade': Jongman (1988: 188–90), Duncan-Jones (1990: 30–47).

¹⁹ Duncan-Jones (1990: 58). To be exact, what he asserts is that certain facts about the distribution of terracotta lamps do not support the view that there was a single integrated economy. As to whether this is true or significant, see below.

²⁰ A criticism which might be directed against some of the contributors to the useful volume edited by Begley and De Puma (1991).

²¹ This is not to belittle what scholars have written about Roman mining, much of which can be traced through Mangin (1988), *Minería y metalurgia* (1989), and Domergue (1990).

A REDISTRIBUTIVE ECONOMY OR A MARKET ECONOMY?

The questions raised in the previous section about labour, money, and trade are typically modern preoccupations, or so it might be said (but I have not mentioned the most characteristic of twentieth-century economic preoccupations, growth). This should give us pause. The greatest historian of the ancient economy, Rostovtzeff, is well known to have ‘modernized’ the Romans, with unfortunate consequences—a mistake to be avoided. Should we not, in the words of a recent writer about early medieval England, | ‘imagine...an economy (or rather economies) which operated in ways very different indeed from those we in the modern West are most familiar with’?²² Such an admonition would certainly not be necessary nowadays in the realm of Roman imperial history, where the influence of Karl Polanyi is belatedly quite strong.²³ Ancient historians are aware that the Greeks and Romans are, from a modern point of view, part of ‘the other’ (a strong reason for studying them). All agree that we must be ready to identify conceptual and organizational frameworks quite different from our own. On the other hand, it would be a terribly mistaken scruple to refuse a priori to apply to the Roman world concepts such as supply and demand, money supply, capital, and labour. If indifference curves are of any use, there is no particular reason not to apply them to the ancients.²⁴ Nor should we fall into the trap of supposing that ancient attitudes must have been predominantly unmodern. Even ‘primitive’ economies can sometimes and in some respects be analysed in terms that are also applicable to market economies. It is striking, for instance, that Sahlins, in analysing traditional Oceanic economies and doing so with great finesse, repeatedly finds himself admitting the roles of supply and demand.²⁵ For us, the point is to describe the nature and the dynamics of a system which was certainly not modern, but which is not for that reason to be thought of as primitive, unsophisticated, crude, or small-scale.

By now, at least if Pleket is right, we seem to be leaving behind the simple dichotomy between, on the one hand, a quasi-industrial Roman economy, as envisaged by Rostovtzeff, an economy dominated by long-distance trade, and, on the other, a primitive Roman economy of the kind seen by Moses Finley.²⁶ Neither alternative is acceptable. If we want to find an economy similar to that

²² Balzaretto (1992: 142), invoking Polanyi.

²³ The classic paper is Polanyi (1957). Among critiques note Adams (1974).

²⁴ Jongman (1988: 45).

²⁵ Sahlins (1972: 277–314).

²⁶ Pleket (1990: 42, 120). If this is so, it is in good part thanks to D’Arms (1977) (and later works). But some still seem attracted to the familiar dichotomy (e.g. Kneissl 1988). It is customary to trace the views of Rostovtzeff and Finley back to Eduard Meyer and Karl Bücher respectively (on whom cf. H. Schneider 1990), but the modern study of the economic history of the Roman Empire virtually began with Rostovtzeff himself.

of the Roman Empire, a good place to look is neither in the industrial world nor in the traditional societies that have dominated anthropology, but somewhere in the western European economy as it existed between approximately 1400 and 1800. No one would deny that Roman production and distribution differed in important ways from what happened in the mercantile economies of the pre-industrial era. But if we want to understand how a complex economy can function in a world of pre-modern social structures and pre-modern technology, that is an appropriate place to seek comparisons.

However, in some places the notion that the Roman economy was a fairly simple affair—a subsistence economy with inadequate institutions and an unimportant trade in luxuries, plus a trade in staples which was in large part artificial (having been brought into being by the government)—still has a following. The influence of Polanyi is still felt, and (much more) that of Finley. The latter's achievements as a scholar should not be belittled. It is fair to say, however, that he did not realize how much the economy of the Roman Empire differed from that of the classical Greek world which was the original area of his expertise.²⁷ (Polanyi did so to a greater degree, partly it seems because he relied on Rostovtzeff; such at least are the impressions one receives from Polanyi's posthumously published *The Livelihood of Man*²⁸). But it was more than the influence of an individual that recently led a scholar to argue at length that the economy of Pompeii in the first-century AD was essentially a subsistence economy—a thesis which has been subjected to effective criticism.²⁹ Whittaker has maintained that in the Roman Empire gift exchange was a phenomenon comparable in scale to market exchange.³⁰ Another recent writer says that it is 'current orthodoxy'

to dismiss the notion that anything approaching the 'market economy' occurred ... The systems of exchange involved in [the alternative] model are mainly redistributive.³¹

(Such a model may be more applicable to Roman Britain, the immediate object of this scholar's attention, than to most regions.) And certainly this is the doctrine that one encounters in such books about the Roman economy as that of Peacock and Williams.³² But the 'current orthodoxy'—which the author just quoted in fact seeks to undermine with regard to Britannia—is hardly recognizable as such outside Britain.

²⁷ 'Yet only the Greeks warm Finley's heart. They are the real subject of his historical meditation': Momigliano (1975: 37 = 1980: 318).

²⁸ Cf. Polanyi (1977: 275).

²⁹ Jongman (1988: esp. 184–6, 200–203), reacting against Moeller (1976). For criticism of Jongman see Banaji (1989), Frier (1991).

³⁰ Whittaker (1985: 59).

³¹ Griffiths (1990: 25).

³² Peacock and Williams (1986: 60–63): 'in the larger towns...reciprocity and redistribution...played a more dominant part [than market exchange]' (p. 61). Garnsey and Saller (1987: ch. 3) seem to tend in the same direction.

There are several effective ways of arguing that the market economy was very important in the Roman world, and in a sense characteristic of it (which is not to deny that there was also a redistributive economy). One such route we have already glanced at—urban demand. Another way lies through certain types of *instrumentum domesticum*. Pucci has pointed out the great significance in this context of the Gallo-Roman graffiti on the pottery made at La Graufesenque in south-western Gaul. These records show that at La Graufesenque in the period AD 40–100, enormous batches of *terra sigillata* were sometimes fired on single occasions, in one case as many as 34,625 of them; the implication is that, at least as far as *terra sigillata* is concerned, large-scale trade over long distances was in that period the norm.³³ It is in any case impossible to see how the potters of La Graufesenque can have been producing for anything other than a market system. Naturally there is still room to consider how typical all this was of the Roman economy in general.

The ‘redistributive’ economy needs to be cut down to size, as far as the high Empire is concerned (the story begins to change in the Severan era). Of course it existed: in Rome itself there was free grain for some of the citizens (though private entrepreneurs had shipped it to Rome for a profit), and in Greek cities the grain-supply was sometimes subsidized.³⁴ But most of the grain that was consumed even in the semi-parasitical capital was not supplied by the government but arrived by way of trade,³⁵ and the majority of its inhabitants did not receive grain gratis from the state. And we should be careful not to exaggerate the degree of control exercised by the government over the trade in olive oil prior to the Severi.³⁶ A recent claim that as early as Augustus it was the government that imported olive oil from Baetica to Rome³⁷ is a fantasy; evidence for a trend in this direction begins only under Marcus Aurelius. Not many scholars, I think, would now agree with Rostovtzeff that under the principate ‘the largest consumer [of olive-oil and wine] was the imperial *annona* and... most of the merchants... worked on behalf of the emperor’.³⁸ With respect to the pre-Severan principate, these claims seem indefensible.

³³ Pucci (1983: 110). A corpus of the texts discovered by 1980 has been edited by Marichal (1988). For the largest known batch of pots fired at one time, see Marichal no. 18; totals are commonly above 25,000, which impresses someone who last saw a commercial pottery kiln in an Egyptian village (near Luxor in 1991), with a capacity of at most 100–200 pieces. Marichal 16 gives references to the limited amount of parallel material from other Roman sites.

³⁴ The *sitonia* of the Greek cities was an occasional office (Pavis d’Escurac 1987: 118), and it did not in any case mean that the grain trade was in public hands, only that the *sitonai* were to see to it that grain came into the city and was sold at a tolerable price. See further Strubbe (1987: 1989).

³⁵ Rickman (1980: 87–93, 187–97) and Casson (1984b: 96–116), with arguments of very unequal weight, against Pavis d’Escurac (1976).

³⁶ Remesal Rodríguez (1986: 75–6) was not I think justified in saying that the Baetican oil trade was controlled by the state from the Flavian period.

³⁷ Le Roux (1988).

³⁸ Rostovtzeff (1957: 1.158).

Philanthropy distributed cash and commodities on a larger and larger scale in the cities of the Empire, and it may be that Veyne's *Le pain et le cirque* (1976), which so strongly emphasized this aspect of Roman social life, has encouraged the implausible idea that philanthropic distribution amounted to a quantitatively major element in Roman economic life. Gifts could of course be vitally important, and the emperor undoubtedly gave marble from his quarries as well as selling it: it would be interesting to know the proportion of the one activity to the other.³⁹ But imperial gifts could shade into genteel compensation for services rendered.⁴⁰ And when the economically important commodities changed hands, it was not normally by way of gift.

The emperor's own sector of the economy has been much written about, but its operations remain in many ways mysterious.⁴¹ Was there any effective central direction or control? What proportion of the product of the imperial properties came as money? At all events the imperial sector of the economy was certainly large, and we must assume that it included a great deal of internal distribution. To some extent the same will apply to other large households (all dwarfed by the emperor's): the well-to-do could to some extent supply their own households from their own lands.⁴² But we should think not only of urban households drawing supplies from the ideally self-sufficient country estates of their wealthy owners, but also of freedmen and slaves living apart from and independently of their patrons or masters,⁴³ and of the many standard Roman commodities that even the most self-sufficient household is likely to have acquired on the market.

As for what was consumed by the military forces, it is far from clear that a great deal of it should be assigned to the redistributive economy. Officials had to make sure that the armed forces were properly supplied, but all the signs are that in the period we are considering, and even in the age of the Severi, the supplies came in large part from the market⁴⁴—as indeed had long been the

³⁹ Cf. Fant (1993).

⁴⁰ This is e.g. rather obviously an element in the gifts referred to in Pliny, *Ep.* vi.31.14 (after three days' service on a judicial *consilium*), and in those awarded to the *symphoniaci* who entertained Augustus at dinner (Macrobius, *Sat.* ii.4.28).

⁴¹ See in general Millar (1977: 133–201) (pessimistic, p. 175, about the possibilities of clearing up the mysteries). Note Kehoe (1988).

⁴² Cf. Whittaker (1985: 58–62).

⁴³ See esp. Garnsey (1981).

⁴⁴ In the early principate, at least, it appears that the government was still content to rely on private workshops for all or most of the army's supply of weapons and other artifacts. Cf. Wierschowski (1984: esp. 173–8), Oldenstein (1985: 83–6), who argues that such legionary workshops as existed in this period mainly did repairs, and Kunow (1986: 741). For a different view see Bishop (1985a). There was probably a change during the second century: cf. *Dig.* 50.6.7 (Tarruntenus Priscus). The Cappadocian and Judaeian legions obtained clothing from Egypt (but we do not know how the prices paid related to market prices): see *BGU* VII.1564 (AD 138), *P.Ryl.* II.189 (AD 128). The army in Moesia seems to have obtained some of its clothing in Gaul: see Fink (1970: no. 63, ii.18) (Trajanic). A tax exemption awarded to the army's civilian suppliers under the Severi: *Dig.* xxxix.4.9.7 (Paulus).

Roman tradition. All in all, any notion that the economy of the Empire was 'mainly redistributive' seems quite implausible. |

It would be a complicated matter to analyse in full the role of governments, central and local, in the Roman economy. The obvious avenues of approach are taxation and infrastructure. The latter topic may require a new treatment. Why exactly did governments help to provide economic infrastructure? Philanthropists played a large part, but governments were involved in building and maintaining harbours, porticoes, warehouses, and *macella*, not to mention roads.⁴⁵ Official action in this sphere is not to be seen as part of some vast system of paternalistic control, but pure *laissez-faire* certainly did not prevail either. The central government, and without doubt local governments too, wanted trade to flourish,⁴⁶ and within limits took action to assist it.

INTEGRATION

Urban demand for the entire gamut of commodities sustained a large-scale trading economy. The high cost of land-transport, together with the wide dispersal of resources such as metal ores, meant that Rome and the other metropolitan cities, in particular, had to draw on very large areas. For example, Rome drew wine in great quantities not only from the west coast of Italy but from Narbonensis, Tarraconensis, and Crete. The new Customs Law from Ephesus provides another example by showing that metal ore was exported to Rome from the province Asia.⁴⁷ There are plenty of others.⁴⁸ In other words, the spending power concentrated in the capital and the other major cities stimulated production over a wide area, the area that, while possessing suitable climate and soil, was most accessible by sea. The metropolitan cities could only exist as they did because commodities were brought to them from enormous catchment areas. Thus the main geographical patterns of long-distance trade were determined by the location of these markets and of the centres of production or supply. When a commodity could be produced in many different regions—wine for instance—the economics of transport had a powerful effect. The big concentrations of population, wishing to satisfy their needs at reasonable prices, generally did so from the producing areas that could ship to Rome, or wherever the market might be, at relatively low cost.

⁴⁵ Some further systematic accounts are needed. On *macella* see De Ruyt (1983: esp. 352–60) (they were built by philanthropists, supervised and renovated by cities). On port installations see e.g. Meiggs (1973: esp. 64–78), Greene (1986: 29–30). On Egypt, Arabia, and Judaea: Sidebotham (1986: 48–77). See in general H. Schneider (1986: 23–51).

⁴⁶ Pliny, *Pan.* 29, Aelius Aristides, *To Rome* 11–13.

⁴⁷ Engelmann and Knibbe 1989 [= Cottier et al. 2008], line 78.

⁴⁸ Cf. Pleket (1990: 129).

Few scholars who are familiar with the material evidence would, I think, contest the account given in the previous paragraph. But in the second edition of his *Ancient Economy* (1985), Finley's response to information telling against his primitivist version of the Roman economy was to argue (as indeed he had sometimes argued in the first edition) that, whatever the scale of the Roman market, it was not 'integrated', that there was no single Empire-wide market in any significant commodity.⁴⁹ This is an elusive argument, since we have no easy way of measuring or judging the 'integration' of markets. It may be easy to show that the Roman economy was not perfectly 'integrated', but the demonstration serves no purpose unless we can make some comparisons. It may well be that the Roman economy was just as 'integrated' as, say, the European-cum-colonial economy was in 1750, or indeed very much later. In some respects—the market for real estate, for instance—it would not be absurd to suggest that the Roman economy was as integrated as that of a modern multi-state area of comparable size.⁵⁰ Nor are contemporary perceptions without value on the subject of integration: in Italy it was possible to write of 'our' traders in the upper Persian Gulf,⁵¹ just as one could write of 'our' soldiers on the eastern frontier. What was perceived was a unity.

The 'integration' problem reappears prominently in Duncan-Jones's recent book. After emphasizing the slowness of maritime communications, he advances two arguments to show that local trading zones rather than a 'single national market'⁵² predominated. The first is that some issues of silver coin form a much lower proportion of finds from the same period in some parts of the Empire than in others—from which he concludes that what mainly determined the transmission of new coins was not long-distance trade (which would not have treated one issue differently from another), but the procedures of the mint itself. 'Significant differences existed between regional coin-populations of the Principate, and . . . these differences were not erased by inter-regional exchange.'⁵³ The facts are intriguing, even though inter-regional trade often did not bring about inter-regional movement of coinage; but once again the difficulty is to find the right criterion. How much lack of uniformity in coin-populations would be enough to show that inter-regional trade was unimportant in the Roman economy?

The second argument is that the find patterns of terracotta firm-lamps analysed by me in an earlier study [[Chapter 5]] point to patterns of no-more-than-regional trading.⁵⁴ Some firm-lamps were traded over long distances (many hundreds of miles)—that is not in dispute. But the proportion of

⁴⁹ Finley (1985: 177–9).

⁵⁰ I owe this point to Professor Jean Andreau.

⁵¹ Pliny, *NH* vi.140.

⁵² Duncan-Jones (1990: 1).

⁵³ *Ibid.* 42. This argument was presented in more detail in Duncan-Jones (1987).

⁵⁴ See Harris (1980b: esp. 128–9) [[above, pp. 117–18]].

firm-lamps that were so traded to those that were made in a broad sense locally is debatable (it is still my view that the proportion was not great [[see p. 145]]. Some scholars continue to believe in a rather large-scale long-distance trade in lamps.⁵⁵ Let us suppose for the moment that they are wrong: what are the implications for the economy at large? The irrelevance of the perfect-integration model is once again apparent: it could very well be argued that an economy which featured either a widespread system of branch-workshops or a sizeable inter-provincial trade in terracotta lamps was in any case relatively integrated, not relatively unintegrated. And lamps are an extreme case, for the raw material could be found in almost any region, and the manufacturing technique was not difficult. In other words, local manufacture of terracotta lamps would do little if anything to invalidate the model of long-distance trade which is being tentatively advanced in this paper.

Whether we should consider the financial world of the high Roman Empire to be integrated is another question. A detailed study of banks in the western Empire has concluded that they were purely local in scope,⁵⁶ and the same might apply in the eastern provinces. There is no real sign of Empire-wide financial networks—with the not unimportant exception of the imperial household. On the other hand, *negotiatores* who operated over long distances may have had a reasonably effective financial system at their disposal, if it was regularly possible (as it seems to have been) to repay in Rome a maritime loan originally made at Berytus or presumably in any other sizeable port.⁵⁷ The fact that the availability and | cost of loans varied from place to place⁵⁸ might be taken as a symptom of an unintegrated financial system, but the reason may have had more to do with the variable quality of borrowers than with any geographical immobility of money. In any event, those who infer from the admitted limitations of the Roman banking system that the economy as a whole was a simple one⁵⁹ should recall the limited role of banks in the European economy on the eve of the Industrial Revolution,⁶⁰ and recall also that in the Roman Empire great quantities of credit were extended independently of bankers, between *amici* and within *familiae*.⁶¹

The people who may really have been unintegrated into the market economy were the peasants. An attempt was made not long ago to differentiate a 'peasant economy' from the economy of large estates.⁶² Subsequently, scholars

⁵⁵ Bailey (1987).

⁵⁶ Andreau (1987a: 663, 668–70).

⁵⁷ *Dig.* xlv.1.122.1 (Scaevola, therefore in or near to the reign of Marcus).

⁵⁸ *Dig.* xiii.4.3 (Gaius).

⁵⁹ The view cautiously espoused by Bürge (1987).

⁶⁰ As observed by Thompson (1982: 78–80). Cf. also Pleket (1990: 38).

⁶¹ Within *familiae*: D'Arms (1981: 101–8). Between *amici*: we still lack a full account of the economic aspects of *amicitia* under the principate (see meanwhile Garnsey and Saller 1987: 154–6).

⁶² Corbier (1981: 441–3).

suggested that the separation of the peasant economy from the market may have been exaggerated.⁶³ Only a quite thorough and panoramic examination of the Italian and provincial economies could give a clear answer to this question.

MONEY, OWNERSHIP, CAPITAL AND CAPITALISM, MANAGEMENT

To revert to the subject of money: the usual question is whether the economy of the entire Empire was thoroughly monetized. The importance of the problem can be exaggerated,⁶⁴ and a certain number of barter transactions do not necessarily mean that the system was primitive. In the eyes of the well-travelled Strabo, regions that lacked money, such as the deep interior of Lusitania, or Dalmatia, were strange and marginal,⁶⁵ and he wrote of course before the integration of the imperial economy reached its fullest extent (Dalmatia at least is likely to have been different at a later date.) In fact a fair quantity of evidence points to the monetization of the country-town market as well as of the larger cities.⁶⁶

Was the economy of the high Roman Empire as a whole constricted by a shortage of money? From time to time it is suggested that the Roman world possessed insufficient cash or credit.⁶⁷ At first sight, the obstacles in the way of deciding whether this is true are formidable. We do not know even approximately how much money there was in the Roman Empire at any given time,⁶⁸ and the topic is beset with problems. There should not be any doubt that Roman coinage was partially fiduciary—in other words, | the money supply was not wholly dependant on the government's resources in the relevant metals.⁶⁹ And although the common assertion that only coins were money in the Roman Empire is in a sense true, the money supply was—to an

⁶³ Cf. Millar (1981: 72–3), Pleket (1990: 86–8), De Ligt (1990; 1991).

⁶⁴ Cf. the comment of Carrié (1980: 115) on the economy of the Abruzzi c.1930.

⁶⁵ Strabo iii.155 (Lusitania), vii.315 (Dalmatia and the barbarians). Cf. Duncan-Jones (1990: 34).

⁶⁶ Veyne (1979b: 266 n. 22) and (concerning Belgica) Wightman (1985: 156). For further discussion of money in the countryside see De Ligt (1990: 33–42). On the monetized economy of a large estate in Egypt, see Rathbone (1991: 318–30).

⁶⁷ The allegedly under-monetized economy: Duncan-Jones (1980: 77–8).

⁶⁸ Goldsmith's attempt to estimate the volume of coinage (1987: 40–42) is guesswork.

⁶⁹ Cf. Lo Cascio (1981: 79), Freyberg (1989: 87–8). Mommsen knew this: see De Cecco (1985: 811). A sentence from the latter article is worth quoting: 'what an economist sadly misses when reading Roman monetary history is a sense of the development of the monetary and financial system in the millennium spanned by the Roman state' (p. 821). It would hardly be surprising if some people continued for some purposes to judge coins by their metallic content; but a well-known text, Arrian, *Epictet.* iv.5.16–17, seems to show that in Trajan's time debasement did not affect acceptability.

unquantifiable extent—larger than the supply of coinage,⁷⁰ for the Romans knew other instruments that amounted to money or near-money. They possessed callable deposits, and on a far from negligible scale.⁷¹ Nor was near-money confined to a few big cities. A recent analysis of a large estate in third-century Egypt concluded convincingly that

the use of credit arrangements [there . . .] extended the monetisation of the rural economy beyond the limit of the quantity of coin in circulation. At a rough estimate, based on the quantity of credit transactions in Heroninus' accounts, it doubled it.⁷²

The money supply may, for all we know, have increased more or less steadily throughout the principate. As for the speed at which Roman money circulated, no one, so far, has demonstrated the truth of any general proposition.⁷³

With regard to credit, it is hard to judge whether the Romans had a sufficiently flexible or expandable system. What can be said, however, is that they certainly had multifarious ways of extending and obtaining credit, and that throughout the period under consideration there is no sign of anything worse than one brief and artificial shortage of credit, the well-known crisis of 33 AD. In fact nothing we know about Roman interest-rates—a subject which admittedly needs some new research—suggests that a shortage of capital was ever one of the economic system's serious weaknesses: the rates available to good-quality lenders never seem to have been strikingly high. Large sums could be borrowed from private individuals or from *proxenetae*, brokers, or from banks.⁷⁴ |

⁷⁰ For the narrower view see e.g. Lo Cascio (1981: 76) ('money was coinage'), Nicolet (1988: 157). Lo Cascio incorrectly (in my view) takes issue with Andreau (1977: 1143) on this matter, apparently on the irrelevant grounds that governments did not generally try to influence the volume of credit. For a wider conception of money in Roman antiquity see Mrozek (1985), Freyberg (1988: 93). [[On all this see above, Chapter 10.]]

⁷¹ Cf. Tacitus, *Ann.* vi.16.3, describing the credit crisis of 33: all senators were more extensively involved in money-lending than the law allowed ('neque enim quisquam tali culpa vacuus'), an important even if possibly exaggerated statement. There is no reason to think that this pattern changed much.

⁷² Rathbone (1991: 327).

⁷³ This may seem somewhat grudging in the face of the careful investigation undertaken by Duncan-Jones (1987), who argues that low levels of weight-loss in some Roman imperial coin-hoards result from slower circulation, and infers from this that the Roman economy 'was much more primitive than any modern European economy' (p. 249). That is a large leap. Much of the Roman evidence is from sites peripheral to what might be regarded as the main Mediterranean economy, and Duncan-Jones's comparisons are nineteenth- and twentieth-century. The problem deserves further discussion.

⁷⁴ In Seneca, *Ep.* 119.1, it is assumed that anyone who wants to go into commerce will borrow, and in the first place from *proxenetae*. For the relationships of financiers and merchants see D'Arms (1981: 102–8). Lending by bankers for commercial purposes: Andreau (1987a: 585–7, 656–7). However, bankers seem not, at least as a general rule, to have made maritime loans, presumably because of the high risks (Andreau, pp. 603–4; cf. Bogaert 1968: 355). On the other hand, a banker might be involved in a maritime loan as an intermediary, as was the case with the particular maritime loan we know most about (the banker was a Roman citizen based in Thesalonica): see the revised text of *P.Vindob.Gr.* G 19792 in Biscardi (1974: 211–14) and in Casson (1986b) (= *SB XIV.11850*) (AD 149).

A great deal of effort has been devoted, understandably, to determining the attitudes of the upper class towards commerce.⁷⁵ It is probably the consensus that the senatorial and equestrian elites took little interest, avoided direct involvement, and relied for their income mainly on their estates and on the interest they received on loans (often consumption loans). Upper-class Greeks were perhaps less squeamish than Italian senators: Dio Chrysostom notes that the rich support themselves by means of usury, tenements, leasing slaves, and *by ships*.⁷⁶ In the west, merchants seldom seem to have possessed even curial status, though in Gaul this was fairly common.⁷⁷ Thus the Roman world as a whole was not characterized by a strong commercial bourgeoisie such as was to be found in early-modern, pre-industrial cities in Italy and the Low Countries. Some scholars hold that behind the facade of freedmen there lurk senators, knights, and office-holders from the cities of the Empire with extensive commercial interests. On the other hand, some freedmen *negotiatores* operated not on behalf of well-born patrons but independently.⁷⁸ In a sense, commerce was a sideline for almost all members of the various social elites—they did not work at it day by day; but it was probably, as has been said, a sideline ‘with structural significance’⁷⁹—and not something that they would willingly have done without.

This consensus probably tends to separate the social elite from their sources of income to an excessive degree. The notion that large landowners were indifferent to or uninvolved with the market economy needs to be modified. They usually had freedmen, and they normally took an interest in the commercial aspects of running their estates, such as the selling of the vintage to *negotiatores*.⁸⁰ And their estates often involved considerably more in the way of economic activities than a small number of marketable crops. In any case land was not just land: it could be the site of quasi-industrial production, brick- and pottery-production, for example, and the production of wool and linen.

Who then owned the means of production and distribution in the market sector of the Roman economy? How, more specifically, should we see the balance between different kinds of owners—the emperor himself, wealthy persons of senatorial rank who might own properties in diverse regions, similarly wealthy people of lower social status, free or freed, and those

⁷⁵ See esp. D’Arms (1981), Schleich (1983; 1984).

⁷⁶ Dio Chrysostom vii.104; and see Ps.-Plutarch, *De lib.educ.* 7 = *Mor.* 4b. Cf. Pleket (1984: 14–15).

⁷⁷ On the Fadii of Narbo in the second century, see Cels (1978). Two *nautae Ararici*, captains or rather boat-owners on the River Saône, were respectively a Roman *equus* and a city decurion: *CIL* VI.29722, XIII.11179 (and see further Pleket 1984: 24 n. 104). For merchants holding local office in cities of the eastern Mediterranean, see Pleket (1983: 139–40).

⁷⁸ On this point see Garnsey (1981).

⁷⁹ Pleket (1983: 136); cf. (1984: 13).

⁸⁰ Pliny, *Ep.* viii.2.1 (from which it should be inferred that such behaviour was socially irreproachable).

whose property was purely local? A new and more detailed typology of wealth is needed. And how did the pattern of ownership change? In particular, when and to what extent did the person of the emperor come to own the productive resources of the Empire? We know how the production of bricks in Lazio passed into the hands of senatorial families, and we seem to know that under Marcus Aurelius and Commodus it passed more and more into the hands of the imperial household. Did these patterns obtain more widely? These are vast and in part unanswerable questions, but we have innumerable relevant facts at our disposal, thanks in part to the study of *instrumentum domesticum*. We must also consider small proprietors. One scholar has recently stated that in the olive oil-producing and exporting region around the Baetis there dominated 'un ceto di piccoli proprietari' (though he also allows that there were 'ampie proprietà senatorie').⁸¹ Is this to be believed? In any case one must begin with the ownership of land. Duncan-Jones has measured inequalities in the size of properties in six communities scattered around the Empire, the only six for which appropriate evidence is available (three of them in Italy, one in Numidia, one in *provincia Asia*, and one in Egypt), by painstakingly calculating, as far as the evidence permits, the Gini coefficients, a standard way of measuring inequality. The conclusion is what one should have anticipated: almost all the evidence 'points unequivocally to heavy aggregation of [landed] property in the hands of the rich'.⁸² Actually the Gini coefficients vary considerably (0.394 to 0.856) and raise many questions, not least because the two highest figures are the latest, from Hermopolis and Magnesia on the Maeander in the fourth century. Where in any case are we to look for comparanda? Almost at random one can find Gini coefficients for property ownership as high as most of these Roman ones: 0.5877, for instance, for owners' real property in New York City in 1789 (not at that time a tremendously differentiated society).⁸³ Unfortunately we are not likely to be able to make many other such calculations for the Roman Empire. What is needed now is some differentiation of 'the rich', and further thought about whether the patterns detected by Duncan-Jones are likely to have prevailed elsewhere.

As important as such questions about ownership are questions about the behaviour and mentalities of property-owners and their agents and subordinates. How willing were the members of various social groups to invest, and to invest in productive capacity or commercial ventures, and how strong was their desire to maximize their income (as distinct from their desire for

⁸¹ Zevi (1989: 6).

⁸² Duncan-Jones (1990: 140). (An earlier version of this paper appeared as Duncan-Jones 1976.) The sites are the territory of the Ligures Baebiani, Veleia, and Volcei in Italy (the evidence concerning the last-named is a document of 307); Lamasba in Numidia; Magnesia; and Hermopolis (the last two also from fourth-century documents). The miserable quality of the evidence, by the standards of modern history, must be kept in mind.

⁸³ Klein and Willis (1985: 267).

extravagant consumption, or to look after clients, or otherwise to use money in ways that can be broadly characterized as ‘social’)? Literary and legal texts have never given crystal-clear answers to these questions, which is hardly surprising. D’Arms collected and analysed a great deal of relevant testimony concerning senators.⁸⁴ A wider enquiry is needed, one which will include both the imperial household and all sorts of non-imperial property-owners. It would need to take into account recent work which has shown that heavy investment must have been necessary for Tripolitanian olive oil to capture a substantial share of the city-of-Rome market in the second century.⁸⁵ Heavy investment must also lie behind the large-scale export of wine from Crete to Rome.⁸⁶ The enquiry should be extended to many other commodities: once again, we should be thinking not only of basic foodstuffs, but of the full range of commonplace commodities.

The texts can be highly problematic. This can be illustrated by reference to a well-known text and Tchernia’s interpretation of it. Pliny’s letter viii.2 tells how he gave rebates to the merchants who had bought the vintage on his estates, which subsequently failed. ‘Nous ne sommes pas là dans le monde du calcul économique, mais dans celui de l’évergétisme et de la clientèle.’⁸⁷ That sounds right, but here at least the dichotomy is deceptive. ‘Alii in praedia sua proficiscuntur ut locupletiores revertantur, ego ut pauperior’, ‘others visit their estates to get richer, I do so in order to get poorer’, so Pliny says. Might we not take the great landowner’s claim with a grain or two of salt?⁸⁸ What was distinctive about Pliny’s action, by his own account, was that in refunding a small part of the purchase price he gave a special bonus to the largest buyers—obviously because their goodwill was more valuable to him than that of the other buyers (economists know this phenomenon as a quantity discount). It is hard | to distinguish Pliny’s attitude, on this occasion, from that of a modern corporation,⁸⁹ and the opening of his letter, quoted above, may be taken as the rueful comment of a man who has just made an investment in the elusive substance goodwill, and knows that it will be some time before he receives any return.

Another way of looking at the questions raised in this section is to consider whether we can apply the term ‘capitalism’ to the Roman economy. The question has an element of futility about it, since if we take modern capitalism to be the standard, the answer is clearly that we can only do so with major

⁸⁴ (1981: esp. 152–9).

⁸⁵ Tripolitanian olive oil seems to have come from large estates: Mattingly (1988b: 37). [[See further Mattingly (1994a: ch. 7).]]

⁸⁶ On these imports see Chaniotis (1988).

⁸⁷ Tchernia (1989: 533).

⁸⁸ Corbier (1981: 439) notices that Pliny’s self-interest is served.

⁸⁹ After Hurricane Andrew devastated part of Florida in August 1992, Home Depot Inc. behaved correctly from a business-school point of view by avoiding the price-gouging practised by some individual traders, its intention being to invest in goodwill (*New York Times*, 22 Sept. 1992, p. D1).

reservations. There is always the danger that we shall see the Roman economy more as capitalism *manqué* than as the peculiar and unique structure that it was. On the other hand, the exercise can serve to draw attention to some important features of the Roman economy.

The question has in any case been asked again by J. R. Love in his *Antiquity and Capitalism* (1991), which is in large part a commentary on Max Weber.⁹⁰ The author borrows from Weber the idea of 'political capitalism', to be distinguished from 'market' or 'rational' capitalism, and maintains that under the Roman Empire the latter 'did not advance beyond the embryonic stages'.⁹¹ Political capitalism, in this vocabulary, means a system in which profits are sought largely from opportunities arising in the political sphere, such as warfare and the direct exploitation of subject peoples.⁹² Modern market capitalism, on the other hand, is distinguished by (1) rational capital accounting, (2) capitalist production of society's everyday requirements, (3) ownership of the means of production by private enterprises, (4) freedom of the market, (5) rational production technology, (6) rational, i.e. predictable, law, (7) free labour, and (8) 'commercialization of the economy', by which Weber apparently meant the existence of a market in stocks and property titles.⁹³ Since this description was intended to differentiate modern capitalism from other economic systems,⁹⁴ it is hardly surprising that it succeeds in doing so.

Three comments suggest themselves. First, a broader definition of capitalism could result in our categorizing the Roman economy differently. If one eliminates (7) and (8), for instance, perhaps Rome was capitalistic after all—apart from the fact that it had few factories, or, in the usual modern sense of the word, none at all.⁹⁵ But, second, the question of labour (7) obviously cannot be eliminated (I return to it below). Third, we may now be less inclined than Weber was to think that the Roman Empire was deficient with respect to the other features on the above list—and not only because we may be less confident now that 'rationality' can readily be recognized.

Did the Romans practise 'rational' accounting? They notoriously had no double-entry book-keeping, and a recent study has both confirmed the fact and shown how unimportant it was, as far as business planning was concerned.⁹⁶ It has also been argued that even at the high point of their agronomy

⁹⁰ For other comments on Weber's views on this subject, see Lo Cascio (1988).

⁹¹ Love (1991: 246).

⁹² He elides the republic and the principate to an excessive degree, and transfers too much of the description of the republican aristocracy which he accepts from Harris (1979) (Love 1991: 206–8, 232–3) to the later period.

⁹³ On all this see Weber (1923: esp. 238–40).

⁹⁴ For Weber's developed view on the nature of the Roman economy, cf. *ibid.* 286–9.

⁹⁵ Millar (1981: 73) borrows the description 'a capitalist market economy without factories' for the economic setting of *The Golden Ass*.

⁹⁶ Double-entry book-keeping: De Ste. Croix (1956), on which see Macve (1985). See also Braudel (1979: 510–12 = 1982: 574–5). [[On Roman accounting see further Minaud (2005).]]

the Romans did not know how to calculate the profitability of a vineyard, partly (though not only) because | they had no concept of amortization.⁹⁷ But Columella has in turn been defended.⁹⁸ The dispute cannot be settled here, but it might be reasonable to conclude, with Pleket, that Roman methods of calculating the profitability of an estate were as effective as those that were practised by a progressive landowner in the seventeenth century.⁹⁹ Once again, a brutal dichotomy between archaic and modern is to be avoided, and we must apply realistic standards of 'rationality'.¹⁰⁰ In a rare case where we have extensive documents, as we do for the landed estate of Appianus, they show, according to Rathbone's detailed and cogent analysis,¹⁰¹ that the property of at least some wealthy Romans was managed in a highly rational fashion.

'Rational' production technology is a still more complex matter. There is scarcely any topic in the history of the Roman economy on which a twentieth-century perspective is likely to be more distorting; we take technological improvements so much for granted. No one doubts that by such standards Roman technological progress, especially with regard to productive technology, was very halting. The standard view stops there.¹⁰² Other voices have recently put forward a more positive view, playing down to some degree the difference between the scale and speed of change in Roman times and in the eighteenth and even the nineteenth century.¹⁰³ Greene has shown, for instance, that mechanized water-mills were widely used in the north-western provinces in the second and third centuries,¹⁰⁴ and also that the Roman Empire was in some ways an environment conducive to the diffusion of technological change.¹⁰⁵ Yet the contrasts with the nineteenth century remain sharp, especially with respect to the organization of work, the importance of which Greene rightly emphasizes. Large landowners in the Roman Empire knew very well indeed how to organize labour for their own profit. But the absence of real factories remains crucial.

With capitalism goes management. Who ran large Roman enterprises day by day, and within what legal structures? J.-J. Aubert has given an acute and learned account of these matters.¹⁰⁶ It is becoming plainer than ever that the

⁹⁷ Duncan-Jones (1974: 33–59). The key passage is in Columella iii.3.8–15. Amortization an unknown concept prior to the nineteenth century: Pleket (1990: 98).

⁹⁸ Carandini (1983); briefly but effectively by Nicolet (1988: 138–9).

⁹⁹ Pleket (1990: 96–9).

¹⁰⁰ Cf. Osborne (1991: 136–7). [[There has been much more discussion of rationality in Roman economic behaviour: see esp. Andreau et al. (2004), Kehoe (2007: 37–43).]]

¹⁰¹ Rathbone (1991: esp. 396–401).

¹⁰² E.g. Garnsey and Saller (1987: 198), Love (1991: 146–53).

¹⁰³ Hodge (1990), Pleket (1990: 152–7), Greene (1990; 1992).

¹⁰⁴ Greene (1990: 214–15).

¹⁰⁵ Idem (1992). But what he writes about the diffusion of books (p. 103) is unrealistic (see Harris 1989a: esp. 227–8).

¹⁰⁶ [[Aubert (1994).]]

Romans possessed mechanisms and habits of mind that made it possible for them to manage productive properties (such as branch workshops) at a distance. How large a part did these mechanisms and habits of mind play in the Roman economy?

LABOUR

The problem most in need of further investigation under this heading is the extent and function of slave labour in the provinces. One must almost apologize for the banality of the question, but it is never discussed in full. *The Ancient Economy* asserted that outside Italy slave labour was of minor dimensions,¹⁰⁷ and this may well be 'current orthodoxy', especially in English-speaking lands, but nowhere in his writings did Finley attempt to sustain this point of view with appropriately full arguments, and the generalization does not seem to be firmly based.

How can it still be argued that the lack of direct epigraphical testimony for provincial slavery tells against there having been large numbers of slaves, even though we know well that such evidence is equally lacking in Italy, where the extensive use of slaves is, by the standards of ancient history, so very well-documented?¹⁰⁸ Nor should we be concerned about the shortage of archaeological evidence for slave barracks,¹⁰⁹ for little remains of such structures even in Italy. Clearly the wealthiest parts of the Empire tended to have the highest proportions of slaves, but the numbers of the slaves to be found in provincial cities and their territories often seem to be under-estimated. There is no good evidence that there was a marked shift away from slave labour in agriculture in the early principate, in Italy or elsewhere.¹¹⁰ Nor is there the slightest sign of a shortage of slaves in the period we are considering (or perhaps later on), or any sign that ideas were changing about the possibility of making slave labour profitable to its owners. In other words, it is easy to clear away the negative arguments which have been used against the economic importance of Roman slavery.

Do we also have cogent positive reasons to think that slavery was a major factor in the economic life of the provinces, or at least of many of them? It would be easy for such evidence to be missing, since most slaves were practically as well as legally chattels, and therefore seldom appear in the epigraphical sources. The claim is not that slaves were a majority in any region, but that they were used very heavily in many of the provinces as well

¹⁰⁷ Finley (1973: 71) etc.

¹⁰⁸ Whittaker (1980: 78), MacMullen (1987), answered by Samson (1988).

¹⁰⁹ As was Kehoe (1988: 25) with respect to North Africa; but in general he took a balanced view of the problem of slave labour in that region.

¹¹⁰ Harris (1980a: 117) [[above, p. 60]].

as in Italy, to such an extent that they are likely to have had a determining effect on labour relations as a whole. The force of the positive evidence both epigraphical and literary has been underestimated. The epigraphical evidence reveals great numbers of provincial as well as Italian freedmen, who are inexplicable without a large population of slaves.¹¹¹ Admittedly this is, in the main, urban evidence. About rural labour our sources are exiguous, but literary texts do from time to time show us slaves at work on the land.¹¹²

None of this should be taken to mean that there was as high a proportion of slaves in any province as there was in Italy. But enough has been said to show that the question needs to be re-opened in a systematic way, with methods that are more sensitive to historical probability and the realities of the Roman slave condition, and with due consideration of the slave-exporting provinces in Asia Minor as well as of the slave-consuming provinces.

Such a discussion should include (but not exaggerate the significance of) the relative roles of free craftsmen and slaves in the sorts of workshops which produced *instrumentum domesticum*. At Arretium a large proportion of the *terra sigillata* labour force had consisted of slaves.¹¹³ Some scholars have emphasized the presence of free craftsmen in provincial *terra sigillata* workshops, but in the case of La Graufesenque, with some 30,000 or more pots being fired at one time, or even in the large Arretine workshops of earlier date, plenty of other anonymous labour was required in addition to that of the potters themselves.¹¹⁴

More speculatively, it could be argued that slave labour was an essential element in the Roman imperial economy not only because it determined the character of the labour market in many locations, but also in another sense. Under the Republic, the Romans added rapidly to their financial capital by means of successful imperialism, but after Augustus' time this source of capital declined severely. Perhaps slave labour contributed heavily to capital formation. According to Eric Williams's famous thesis about the Industrial Revolution, a crucial proportion of its capital came from the 'triangular trade' between Britain, West Africa, and the Caribbean, in which the slave trade was the crucial element.¹¹⁵ An economist has recently re-examined this thesis and found merit in it.¹¹⁶ By contrast, conventional descriptions of the economics of the Industrial Revolution largely fail to explain the source of the capital which they rightly judge to be a vital part of the story.¹¹⁷ How were slavery and capital formation related to each other under the Roman Empire?

¹¹¹ Ibid.

¹¹² Apuleius, *Apol.* 87, 93, Dio Chrysostom vii.31 (rural wealth consists of land, animals, and slaves), etc.

¹¹³ See Prachner (1980).

¹¹⁴ Free craftsmen: Marichal (1988: 106). Labour needs: Mayet (1984: 1.210).

¹¹⁵ E. Williams (1944).

¹¹⁶ Findlay (1990), with full bibliography.

¹¹⁷ See e.g. Hicks (1969: 144–5).

TRANSPORT

The Roman economy was far from primitive. It included a degree of economic integration over a vast area, and urban demand sufficient to sustain the production and distribution of a wide range of commodities in economically significant quantities; it involved capitalism in more than an embryonic form and a labour force of such a kind as to permit a high degree of investment. The imprecision in all of this is obvious, and it should be reduced, but that can only be done outside the space permissible to this paper. However, in order to make the account I have been giving at least moderately plausible, something further must be said about transport.

Roman methods of transport are normally thought to have been so backward that they severely hindered economic development. The main limitation was not the size of their merchant ships, for the largest kind of merchant vessel was comparable in size to most (though not all) of its European counterparts in the sixteenth to eighteenth centuries. Relatively small ships also have some advantages, especially in coastal Mediterranean waters, and in the sixteenth and seventeenth centuries many trading ships were still in the range of 20–40 tons.¹¹⁸ It is primarily the high cost of land transport that makes historians pessimistic about the capabilities of the Roman transport system. After ancient historians first realized, a few decades ago, that land transport was very expensive, it became the prevailing opinion that ‘no low-value bulky cargoes could have been traded profitably overland for any significant distances’.¹¹⁹

However, this rule is unsatisfying from a theoretical standpoint, for what determined the feasibility of land transport was simply whether the market would tolerate its costs and still leave room for a profit—in other words, the inelasticity of demand. One sees again the disadvantage of a model that divides commodities strictly into staples and luxuries and assumes that demand for almost everything except grain is extremely elastic. Here my focus is on commodities that could be substituted for out of local productive capacities.

The rule also collides with a good many facts, and a number of scholars have begun to doubt or reject it.¹²⁰ There was in reality a great deal of medium-distance commercial land transport. Sometimes goods that were transported by water also had to be carried for considerable distances over land: this applied, for instance, to much of the grain and olive oil exported from Africa Proconsularis. The wide distribution of East Gaulish pottery, to take another instance, depended heavily on land transport.¹²¹ ‘Their roads can carry boat-loads’, Strabo had written in his description of Italy (v.235), even before the

¹¹⁸ Cf. Hopkins (1983b: 99–100).

¹¹⁹ Greene (1986: 40). Cf. Yeo (1946), Jones (1955: 163–4 = 1974: 37), etc.

¹²⁰ See Hopkins (1978b: 43–9) and (1983a: xx), Meiggs (1982: 339–46), Spurr (1986: 144–6), Sippel (1987); cf. also Harris (1989b) [[above, Chapter 8]].

¹²¹ Wightman (1985: 153–4).

system reached its acme. What is needed now is further study of the marginal cases, cases in which land transport may or may not have been commercially viable—and here *instrumentum domesticum*, together with the study of pottery provenances, has much to offer.

The material evidence concerning transport admittedly contains traps. Wine was often transported in wooden barrels,¹²² which have a much poorer survival rate than amphorae and tend to get forgotten in discussions of the trade in wine. A distribution map of amphora finds (incidentally, I know of no good Empire-wide map of the distribution of such a well-known container as Dressel 20) is not the same as a distribution map of a product, still less of trade in that product.

Concurrently we must ask what difference it made to a community's economy if it was land-bound, a question which Fentress has asked with respect to Numidian Sitifis.¹²³ To get from Sitifis to a port meant 'a choice of tortuous routes through the mountains', each of them more than 100 km long.¹²⁴ In these conditions it is not surprising that the economy was essentially local—with the important exception of the imperial estates nearby. More work of this kind is needed, to find out how inland non-riverine cities related to the market economy at large.

CONSUMPTION

The point here is not to debate about the Sombartian 'consumer city', which, with its overtones of parasitism and its tendency to become the city of *conspicuous* consumption,¹²⁵ has not in my view been a very helpful way of understanding the cities or the economy of the Roman Empire. Attention should be turned, rather, to what anthropologists and social historians have been writing in recent years about consumption in other places and periods.¹²⁶ Such work has sometimes seemed to lack direction, and to be richer in incidental detail than in historical meaning: writers in this genre sometimes give the impression that they have no clear notion of what one might learn about a particular economy by studying the history of a single commodity, or set of commodities, within it. However, the study of consumption—beset though it is with evidential problems—has the potential to tell us a great deal about the Roman economy.

¹²² See Colls et al. (1988), Desbat and Martin-Kilcher (1989: 354) [[, Baratta (1994)]].

¹²³ Fentress (1990).

¹²⁴ Ibid. 118.

¹²⁵ The one shades into the other in Garnsey and Saller (1987: 56–7).

¹²⁶ See esp. Appadurai (1986), Rutz and Orlove (1989).

We could ask questions such as the following about each important Roman commodity:

- (1) What were the patterns of consumption, in terms of region and in terms of social class? Who, for example, consumed olive-oil, medicines, perfume, vegetables, who acquired and used metal tools, who bought jewellery?
- (2) What are the implications of these consumption patterns for production and distribution in the Roman economy? We know that the use of *terra sigillata* was remarkably widespread, in both social and geographical terms. That seems to imply an effective low-cost system of distribution. We should extend the speculation to many other commodities.
- (3) What in fact determined the 'consumption choices' which Romans made? The question is far from being purely economic. The nexus of economic calculations, tastes, desires, and social pressures that told the Romans how to allocate their resources might be explored with interesting results.

Is it possible to find out such things about the classical world? In some instances, at least, it is. Tchernia has systematically considered who consumed wine in Italy, how much, and of what kind. Other scholars have considered, for example, who, in addition to soldiers and immigrants from the south, used olive oil in the parts of Gaul where olive trees were not grown, and who in terms of social class owned *terra sigillata*.¹²⁷

Any analysis of this kind must pay careful attention to social class, a subject which Roman historians (rather paradoxically) discuss too little.¹²⁸ For

[in] less developed countries, it is not difficult to recognize different consumption styles. They usually correspond to very different levels of income, and to a very obvious stratification of society...¹²⁹

We have a wealth of evidence with which to test whether this is true about the Roman Empire. The result could be a more concrete image of Roman social structure, and also (to return to economic history) a better way of estimating the economic importance of particular commodities.

Take metal artifacts, for instance. Pompeii makes it clear that the aggregate of metal artefacts such as household vessels and utensils of every kind, farm implements, craftsmen's tools, fittings for vehicles and harnesses, jewellery and ornaments, statues, locks, nails, and water pipes to be found in an Italian city under the Flavians was enormous. Who created this demand? This is not the kind of question that Pompeianists have been in the habit of addressing,

¹²⁷ Le Gall (1983), Curk (1990).

¹²⁸ Such at least is my opinion, reflected in Harris (1988) [[above, Chapter 1]].

¹²⁹ Douglas and Isherwood (1979: 176).

but the evidence is, by an ancient historian's standards, ample. In other cities the story may have been quite different: it is reported that in the excavation of the inland town Sitifis, almost no metal objects were found apart from nails¹³⁰ (but that may have been because the town sank gradually into economic decay instead of being immortalized like Pompeii in the midst of its prosperity). In the documents concerning the Fayum estate of Appianus, 'iron is rarely attested', and other metals not at all, except in the form of coin.¹³¹

TOWARDS A MORE CONSECUTIVE ACCOUNT

In the foregoing sections I have tried to show where some of the pathways into the very imperfectly explored interior of the Roman economy are situated. There is a strong element of personal opinion in this. But all would probably agree that we need a less static and more dynamic account. It is a truism that this economy, or system of inter-connected sub-economies, if that is what it was, developed, and by the Severan age had done so in fundamental ways.

Shall we ever be able to write the sort of articulated diachronic history of the Roman economy that we might like, one which would link all the main phenomena together in a credible fashion? Perhaps not. But we should at least be able to trace changes from one period to another. Most obviously in need of attention is the period of economic strain which began during the reign of Marcus Aurelius and continued under the Severans (there was strong regional variation, of course).¹³² Another period may have begun earlier in the second century, for fundamental relationships within the Roman economy may already have begun to change during the reigns of Hadrian and Pius. Is there any good way of periodizing the specifically economic history of the Roman Empire between Augustus and Trajan? These and related questions remain open.

[[*Addendum*

Many of the issues raised in this survey have been extensively discussed since its publication.

On the integration of the Roman economy, Bowman and Wilson (2009b: 15–28) have provided a valuable new survey, stressing the complexity of the question and the certainty that integration intensified in some periods and decreased in others. Kessler and Temin (2008) have argued that the small number of available wheat prices indicate

¹³⁰ Fentress (1990: 124).

¹³¹ Rathbone (1991: 172).

¹³² On the steep decline of central Italian agriculture in the late second and early third centuries, see Carandini (1985: 1.185).

an integrated Empire-wide market, but the argument will not satisfy everyone. Part of the problem is not knowing what we should expect, given Roman systems of transport and information-exchange. Why, in any case, are we so much concerned over this issue? Partly to show that the Finleyan model was a mistake, and as far as integration is concerned I consider that we have already done that. If I were to investigate the matter further, I would devote further attention to the distribution of metals, and to the remarkable degree of migration (see, just for the sake of example, Mócsy 1974: chs 3 and 7 on Pannonia).

An unmodern aspect of Roman society merited a little more space here—the relatively high level of illiteracy that always prevailed in the Roman world. Here my position has not changed significantly since I wrote *Ancient Literacy* (and on *instrumentum domesticum* and literacy see Harris (1995b)). The complex Roman economy could not of course have functioned without a widely diffused corps of people—many of them slaves—to whom writing was second nature. At the same time, no government, and very few philanthropists, ever showed any interest in mass education, even in a single city. Individuals invested in ‘human capital’ by educating their own slaves, but larger actors did not, or not to any significant degree. While it is possible that some regions of the Greek world had been historically anomalous in this respect in classical and Hellenistic times, and there may have been some carry-over into Roman times, this picture of the Roman world as a whole is scarcely in need of further defence. The economic effects of extensive illiteracy and semi-literacy were complex, but it remains true no doubt that a great deal of dynamism was frustrated, and also that technology transfer was hindered (not of course prevented) by the difficulties of written communication. See Harris (1989a: esp. 197–206; 1995b). This state of affairs did not necessarily prevent intensive economic growth, but it helped to make an industrial revolution impossible (but for some interesting scepticism about the economic importance of literacy see Allen 2003: 433–4). There is now a monstrous bibliography on Roman literacy: particularly useful for present purposes are Frasca (1996) and Aubert (2004).]]

References

- Actes du colloque 1972 sur l'esclavage* (Paris, 1974).
- Adams, R. M. (1974). 'Anthropological Perspectives on Ancient Trade', *Current Anthropology* 15, 239–49.
- Adembri, B. (1996). 'Le ceramiche figurate più antiche di Ostia', in A. Gallina Zevi and A. Claridge (eds.), *'Roman Ostia' Revisited* (London), 39–67.
- Alcock, S. (1993). *Graecia Capta: The Landscapes of Roman Greece* (Cambridge).
- (2007). 'The Eastern Mediterranean', in Scheidel et al. (2007: 671–98).
- Alfieri, N. (1964). 'Le vie di comunicazione dell'Italia settentrionale', in *Arte e civiltà romana nell'Italia settentrionale* (Bologna), 1.55–70.
- (1968). 'Tipi navali nel delta antico del Po', in *Atti del convegno internazionale di studi sulle antichità di Classe, Ravenna 14–17 ottobre 1967* (Ravenna), 187–207.
- Alföldy, G. (1972). 'Die Freilassung von Sklaven und die Struktur der Sklaverei in der römischen Kaiserzeit', *Rivista storica dell'antichità* 2, 97–128; repr. with *Nachträge* in *Die römische Gesellschaft* (Stuttgart, 1986), 286–331.
- (1975). *Römische Sozialgeschichte* (Wiesbaden; 3rd edn 1984).
- Allen, R. C. (2003). 'Progress and Poverty in Early Modern Europe', *EconHR* 46, 403–43.
- (2005). 'Real Wages in Asia and Europe: A First Look at the Long-Term Patterns', in Allen et al. (2005a: 111–30).
- (2007). 'How Prosperous were the Romans? Evidence from Diocletian's Price Edict (301 AD)', University of Oxford, Department of Economics, Discussion Paper Series no. 363; repr. as Allen (2009).
- (2009). 'How Prosperous Were the Romans? Evidence from Diocletian's Price Edict (AD 301)', in Bowman and Wilson (2009a: 327–45).
- T. Bengtsson, and M. Dribe (eds.) (2005a). *Living Standards in the Past: New Perspectives on Well-Being in Asia and Europe* (Oxford).
- ——— (2005b). 'Introduction', in Allen et al. (2005a: 1–21).
- Alston, R. (1998). 'Trade and the City in Roman Egypt', in Parkins and Smith (1998: 168–202).
- Amouretti, M.-C. (1986). *Le pain et l'huile en Grèce antique* (Paris).
- Amphores romaines et histoire économique, dix ans de recherche: actes du colloque de Sienne (22–24 mai 1986)* (Rome, 1989).
- André, J. (1961). *L'alimentation et la cuisine à Rome* (Paris).
- Andreaeu, J. (1968). 'Banque grecque et banque romaine dans le théâtre de Plaute et de Térence', *MEFRA* 80, 461–526.
- (1974). *Les affaires de Monsieur Jucundus* (Rome).
- (1976). 'Pompéi: enchères, foires et marchés', *Bulletin de la Société Nationale des Antiquaires de France*, 104–26.
- (1977). 'M. I. Finley, la banque antique et l'économie moderne', *Annali della Scuola Normale Superiore di Pisa* 7, 1129–52.

- Andreau, J. (1982). 'Brèves remarques sur les banques et le crédit au Ier siècle av. J.-C.', *Annali dell'Istituto Italiano di Numismatica* 29, 99–123; repr. in Andreau (1997: 47–73).
- (1983). 'A propos de la vie financière à Pouzzoles: Cluvius et Vestorius', in *Les 'bourgeoisies' municipales*, 9–20 ; repr. in Andreau (1997: 99–118).
- (1985). 'L'état romain face au monde de la banque et du crédit', in *Etat, fiscalités, économies: Actes du Ve Congrès de l'Association Française des Historiens Économistes* (Paris), 3–11; repr. in Andreau (1997: 203–16).
- (1986). 'Declino e morte dei mestieri bancari nel Mediterraneo occidentale (II–IV d.C.)', in Giardina (1986: 1.601–15); repr. in Andreau (1997: 133–55).
- (1987a). *La vie financière dans le monde romain: les métiers de manieurs d'argent (IV^e siècle av. J.-C.–III^e siècle ap. J.-C.)* (Rome).
- (1987b). 'Les comptes bancaires en nature', *Index* 15, 413–22 ; repr. in Andreau (1997 : 189–201).
- (1991). 'Mercati e mercato', in Schiavone (1988–93: 2.2, 367–86).
- (1992). 'L'argent à Rome: les rentes de l'aristocratie', in R. P. Droit (ed.), *Comment penser l'argent?* (Paris), 161–72; repr. in Andreau (1997: 259–70).
- (1994a). 'La cité romaine dans ses rapports à l'échange et au monde de l'échange', in J. Andreau, P. Briant, and R. Descat (eds.), *Économie antique: les échanges dans l'antiquité* (Saint-Bertrand-de-Comminges), 83–98; repr. in Andreau (1997: 385–407).
- (1994b). 'Pouvoirs publics et archives des banquiers professionnels', in S. Demougin (ed.), *La mémoire perdue: à la recherche des archives oubliées, publiques et privées, de la Rome antique* (Paris), 1–18.
- (1994c). 'L'Italie impériale et les provinces: déséquilibre des échanges et flux monétaires', in *L'Italie d'Auguste à Dioclétien* (Rome), 175–204; repr. in Andreau (1997: 335–69).
- (1997). *Patrimoines, échanges et prêts d'argent: l'économie romaine* (Rome).
- (1999). *Banking and Business in the Roman World* (Cambridge).
- (2000). 'Commerce and Finance', in *CAH* 11, 2nd edn, 769–86.
- (2002). 'Markets, Fairs and Monetary Loans', in P. Cartledge, E. E. Cohen, and L. Foxhall (eds.), *Money, Labour and Land: Approaches to the Economies of Ancient Greece* (London), 113–29.
- (2008). 'The Use and Survival of Coins and of Gold and Silver in the Vesuvian Cities', in Harris (2008b: 208–25).
- (2010). *L'Économie du monde romain* (Paris).
- J. France, and S. Pittia (eds.) (2004). *Mentalités et choix économiques des Romains* (Paris).
- and J. Maucourant (1999). 'A propos de la "rationalité économique" dans l'antiquité gréco-romaine', *Topoi* 9, 47–102.
- Appadurai, A. (ed.) (1986). *The Social Life of Things: Commodities in Cultural Perspective* (Cambridge).
- Asheri, D. (1969). 'Leggi greche sul problema dei debiti', *SCO* 18: 5–122.
- Atkins, M., and R. Osborne (eds.) (2006). *Poverty in the Roman World* (Cambridge).
- Aubert, J.-J. (1993). 'Workshop Managers', in Harris (1993d: 171–81).

- Aubert, J.-J. (1994). *Business Managers in Ancient Rome: A Social and Economic Study of Institores, 200 B.C.–A.D. 250* (Columbia Studies in the Classical Tradition 21) (Leiden).
- (2001). 'The Fourth Factor: Managing Non-agricultural Production in the Roman World', in Mattingly and Salmon (2001: 90–111).
- (2003). 'Monetary Policy and Gresham's Law in the Late Third Century A.D.', in Lo Cascio (2003: 245–63).
- (2004a). 'De l'usage de l'écriture dans la gestion d'entreprise', in Andreau et al. (2004: 127–47).
- (2004b). 'Aux origines du canal de Suez? Le canal du Nil à la mer Rouge revisité', in M. Clavel-Lévêque and E. Hermon (eds.), *Espaces intégrés et ressources naturelles dans l'Empire Romain* (Besançon), 219–52.
- Austin, R. G. (ed.) (1960). *M. Tulli Ciceronis pro M. Caelio oratio*, 3rd edn (Oxford).
- Backendorf, D. (1998). *Römische Münzschätze des zweiten und ersten Jahrhunderts v. Chr. vom italienischen Festland* (Berlin).
- Bagnall, R. S. (1993). *Egypt in Late Antiquity* (Princeton).
- (1997). 'Missing Females in Roman Egypt', *Scripta Classica Israelica* 16, 121–38.
- (2000). 'Governmental Roles in the Economy of Late Antiquity', in E. Lo Cascio and D. W. Rathbone (eds.), *Production and Public Powers in Classical Antiquity* (Cambridge), 86–91.
- (2005). 'Evidence and Models for the Economy of Roman Egypt', in Manning and Morris (2005: 187–204).
- and R. Bogaert (1975). 'Orders for Payment from a Banker's Archive', *Ancient Society* 6, 79–108; repr. in Bogaert (1994: 219–44).
- and B. W. Frier (1994). *The Demography of Roman Egypt* (Cambridge).
- and J. A. Sheridan (1994). 'Greek and Latin Documents from 'Abu-Sha'ar, 1990–1991', *Journal of the American Research Center in Egypt* 31, 159–68.
- Bailey, D. M. (1987). 'The Roman Terracotta Lamp Industry', in *Les lampes de terre cuite en Méditerranée* (Lyon), 59–63.
- Bairoch, P., J. Batou, and P. Chèvre (1988). *La population des villes européennes 800–1850* (Geneva).
- Baldacci, P. (1967–68). 'Alcuni aspetti dei commerci nei territori cisalpini', *Atti del Ce. S.D.I.R.* 1, 5–50.
- (1972). 'Le principali correnti del commercio di anfore romane nella Cisalpina', in *I problemi della ceramica di Ravenna, della Valle padana a dell'alto Adriatico* (Bologna), 103–31.
- Ball, J. N. (1977). *Merchants and Merchandise: the Expansion of Trade in Europe 1500–1630* (London).
- Balzaretti, R. (1992). 'Trade, Industry and the Wealth of King Alfred', *Past and Present* 135, 142–50.
- Banaji, J. (1989). Review of Jongman (1988), *JRS* 79, 229–31.
- (2001). *Agrarian Change in Late Antiquity: Gold, Labour, and Aristocratic Dominance* (Oxford).
- Bang, M. (1910, 1912). 'Die Herkunft der römischen Sklaven', *Römische Mitteilungen* 25, 223–51; 27, 198–221.

- Bang, P. F. (2007). 'Trade and Empire: In Search of Organizing Concepts for the Roman Economy', *Past and Present* 195, 3–54.
- (2008). *The Roman Bazaar: A Comparative Study of Trade and Markets in a Tributary Empire* (Cambridge).
- Bankole, K. K. (1998). *Slavery and Medicine: Enslavement and Medical Practices in Antebellum Louisiana* (New York).
- Baratta, G. (1994). 'Bolli su botti', in *Epigrafia della produzione e della distribuzione* (Rome), 555–65.
- Barker, G. (1989). 'The Archaeology of the Italian Shepherd', *Proceedings of the Cambridge Philological Society* 35, 1–19.
- and J. Lloyd (eds.) (1991). *Roman Landscapes: Archaeological Survey in the Mediterranean Region* (London).
- Barlow, C. T. (1978). *Bankers, Moneylenders, and Interest Rates in the Roman Republic* (diss., University of North Carolina).
- (1980). 'The Roman Government and the Roman Economy, 92–80 B.C.', *American Journal of Philology* 101, 202–19.
- Bastomsky, S. J. (1990). 'Rich and Poor: The Great Divide in Ancient Rome and Victorian England', *Greece and Rome* 37, 37–43.
- Bean, G. E. (1954). 'Notes and Inscriptions from Caunus', *Journal of Hellenic Studies* 74, 85–110.
- Becker, G. S. (1993). *Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education*, 3rd edn (Chicago).
- Beckles, H., and V. Shepherd (eds.) (1991). *Caribbean Slave Society and Economy* (New York); both articles cited from this volume are also reprinted in Shepherd and Beckles (eds.), *Caribbean Slavery in the Atlantic World: A Student Reader* (Princeton, 1999).
- Begley, V., and R. V. de Puma (eds.) (1991). *Rome and India: The Ancient Sea Trade* (Madison, 1991).
- Bekker Nielsen, T. (1988). 'Terra Incognita: The Subjective Geography of the Roman Empire', in *Studies in Ancient History and Numismatics Presented to Rudi Thomsen* (Aarhus), 148–61.
- Beloch, J. (1886). *Die Bevölkerung der griechisch-römischen Welt* (Leipzig).
- Bémont, C. (1976). *Recherches méthodologiques sur la céramique sigillée: les vases estampillés de Glanum* (Rome).
- and J.-P. Jacob (eds.) (1986). *La terre sigillée gallo-romaine: lieux de production du Haut Empire: implantations, produits, relations* (Paris).
- Benoit, F. (1950). 'Saint-Tropez', *Gallia* 8, 130.
- Béranger, J. (1970). 'Ordres et classes d'après Cicéron', in *Recherches sur les structures sociales*, 225–42.
- Berger, A. (1953). *Encyclopedic Dictionary of Roman Law* (Philadelphia).
- Bergier, J.-F. (ed.) (1989). *Montagnes, fleuves, forêts dans l'histoire: barrières ou lignes de convergence?* (St Katharinen).
- Berry, B. J. L. (1967). *Geography of Market Centers and Retail Distribution* (Englewood Cliffs, NJ).
- Beyer, F. (1995). *Geldpolitik in der römischen Kaiserzeit* (Wiesbaden).

- Biezuńska-Małowist, I. (1977). *L'esclavage dans l'Égypte gréco-romaine. Seconde partie: période romaine* (Wrocław).
- (1988). 'L'Égypte et l'histoire de l'esclavage dans l'antiquité', in L. Criscuolo and G. Geraci (eds.), *Egitto e storia antica dall'ellenismo all'età araba* (Bologna), 261–70.
- Billeter, G. (1898). *Geschichte des Zinsfusses im griechisch-römischen Altertum bis auf Justinian* (Leipzig).
- Bintliff, J. L., and A. M. Snodgrass (1985). 'The Cambridge/Bradford Boeotian Expedition: The First Four Years', *Journal of Field Archaeology* 12, 123–61.
- Biscardi, A. (1974). *Actio pecuniae traiecticiae*, 2nd edn (Turin).
- Bisel, S., and J. Bisel (2002). 'Health and Nutrition at Herculaneum: An Examination of Human Skeletal Remains', in W. F. Jashemski and F. G. Meyer (eds.), *The Natural History of Pompeii* (Cambridge), 451–75.
- Bishop, M. C. (1985a). 'The Military *Fabrica* and the Production of Arms in the Early Principate', in Bishop (1985b: 1–42).
- (ed.) (1985b). *The Production and Distribution of Roman Military Equipment* (Oxford).
- Blishen, E. (1972). *A Cackhanded War* (London).
- Blümner, H. (1875–87). *Technologie und Terminologie der Gewerbe und Künste bei Griechen und Römern* (Leipzig, 4 vols).
- Boatwright, M. T. (2000). *Hadrian and the Cities of the Roman Empire* (Princeton).
- Bodel, J. (2005). 'Caveat Emptor: Towards a Study of Roman Slave-Traders', *JRA* 18, 181–95.
- Boese, W. E. (1973). *A Study of the Slave Trade and the Sources of Slaves in the Roman Republic and the Early Roman Empire* (diss., University of Washington).
- Boethius, A., and J. B. Ward-Perkins (1970). *Etruscan and Roman Architecture* (Harmondsworth).
- Boffo, L. (1977). 'Per la storia della antica navigazione fluviale padana: un *collegium nautarum* o *naviculariorum* a Ticinum in età imperiale', *Rendiconti dell'Accademia dei Lincei* 32, 623–32.
- Bogaert, R. (1968). *Banques et banquiers dans les cités grecques* (Leiden).
- (1983a). 'Note sur l'emploi du chèque dans l'Égypte ptolémaïque', *Chronique d'Égypte* 58, 212–21; repr. in Bogaert (1994: 245–52).
- (1983b). 'Les κολλυβιστικάι τράπεζαι dans l'Égypte gréco-romaine', *Anagennesis* 3, 21–64; repr. in Bogaert (1994: 95–120).
- (1988). 'Les opérations en nature des banques en Égypte gréco-romaine', *Ancient Society* 19, 213–24; repr. in Bogaert (1994: 397–406).
- (1994). *Trapezitica Aegyptiaca: recueil de recherches sur la banque en Égypte gréco-romaine* (Florence).
- (1995). 'Liste géographique des banques et des banquiers de l'Égypte romaine', *ZPE* 109, 133–73.
- (1998–99). 'Les opérations des banques de l'Égypte ptolémaïque', *Ancient Society* 29, 49–145.
- (2001). 'Les documents bancaires de l'Égypte gréco-romaine et byzantine', *Ancient Society* 31, 173–288.
- Bosio, L. (1967). 'I problemi portuali della frangia lagunare veneta nell'antichità', in *Venetia: studi miscellanei di archeologia delle Venezie* I (Padua), 11–96.

- Bosworth, A. B. (2002). 'Vespasian and the Slave Trade', *CQ* 52, 350–57.
- Boudon-Millot, V. (2007). 'Un traité perdu de Galien miraculeusement retrouvé, le *Sur l'inutilité de se chagriner*: texte grec et traduction française', in *La science médicale antique: nouveaux regards. Études réunies en l'honneur de Jacques Jouanna* (Paris), 73–123.
- Boulakia, J. D. C. (1972). 'Lead in the Roman World', *AJA* 76, 139–44.
- Les 'bourgeoisies' municipales italiennes aux IIe et Ier siècles av. J.-C.* (Paris, 1983).
- Bove, L. (1972). 'Proscriptiones nelle nuove tavolette pompeiane. Tab.Pomp. 19–22', *RAAN* 47, 167–86.
- (1984). *Documenti di operazioni finanziarie dall'archivio dei Sulpici* (Naples).
- Bowersock, G. W. (1983). *Roman Arabia* (Cambridge, MA).
- Bowman, A. K. (1986). *Egypt after the Pharaohs* (Berkeley).
- and Wilson, A. (eds.) (2009a). *Quantifying the Roman Economy: Methods and Problems* (Oxford).
- (2009b). 'Quantifying the Roman Economy: Integration, Growth, Decline?', in Bowman and Wilson (2009a: 3–84).
- Bradley, K. R. (1978). 'The Age at the Time of Sale of Female Slaves', *Arethusa* 11, 243–52.
- (1994). *Slavery and Society at Rome* (Cambridge, 1994).
- (2004). 'On Captives under the Principate', *Phoenix* 58, 298–318.
- Braudel, F. (1972). *The Mediterranean and the Mediterranean World in the Age of Philip II* (trans. S. Reynolds) (London); originally published as *La Méditerranée et le monde méditerranéen à l'époque de Philippe II* (Paris, 1949).
- (1979). *Les jeux de l'échange (Civilisation matérielle, économie et capitalisme 2)* (Paris), trans. S. Reynolds as *The Wheels of Commerce* (New York, 1982).
- Braund, D. C., and G. R. Tsetschladze (1989). 'The Export of Slaves from Colchis', *CQ* 39, 114–25.
- Bresson, A. (2008). *L'économie de la Grèce des cités* (Paris, 2 vols).
- Brett, M., and E. Fentress (1996). *The Berbers* (Oxford).
- Brien-Poitevin, F. (1996). 'La consommation des coquillages marins en Provence à l'époque romaine', *Revue archéologique de Narbonnaise* 29, 313–20.
- Brogiolo, G. P., and G. Olcese (eds.) (2000). *Produzione ceramica in area padana tra il II sec. a.C. e il VII sec. d.C.: nuovi dati e prospettive di ricerca* (Mantua).
- Broughton, T. R. S. (1960). *The Magistrates of the Roman Republic, Supplement* (New York).
- (1974). 'Some Notes on Trade and Traders in Roman Spain', in *Polis and Imperium: Studies in Honour of E. T. Salmon* (Toronto), 11–30.
- Brown, P. (2002). *Poverty and Leadership in the Later Roman Empire* (Hanover, NH).
- Brulé, P. (1990). 'Enquête démographique sur la famille grecque antique', *RÉA* 92, 233–58.
- Brun, J.-P. (2006). 'L'énergie hydraulique durant l'Empire romain: quel impact sur l'économie agricole?', in Lo Cascio (2006: 101–30).
- Brunt, P. A. (1971). *Italian Manpower, 225 B.C.–A.D. 14* (Oxford).
- (1975). 'Two Great Roman Landowners', *Latomus* 34, 619–35.
- (1988). *The Fall of the Roman Republic and related essays* (Oxford).
- (1990). *Roman Imperial Themes* (Oxford).
- Brusin, G. (1934). *Gli scavi di Aquileia* (Udine).

- Buchi, E. (1973). 'Banchi di anfore romane a Verona: note sui commerci cisalpini', in *Il territorio Veronese*, 531–637.
- (1975). *Lucerne romane con marchio di fabbrica* (Aquileia).
- Bürge, A. (1987). 'Fiktion und Wirklichkeit: Soziale und rechtliche Strukturen des römischen Bankwesens', *ZSS* 104, 465–558.
- (1989). Review of Andreau (1987), *Gnomon* 61, 318–25.
- Buora, M. (1985). 'Sul commercio dei laterizi tra Aquileia e la Dalmazia', in *Aquileia, la Dalmazia e l'Illyricum* 1 (Udine) (= *Antichità Altoadriatiche* 25), 209–26.
- Burdese, A. (1973). '"Actio ad exemplum institoriae" e categorie sociali', *Studi in memoria di Guido Donatuti* (Milan), II, 191–210.
- Burford, A. (1960). 'Heavy-Transport in Classical Antiquity', *EconHR* 13, 1–18.
- Burillo Mozota, F. (1991). 'The Evolution of Iberian and Roman Towns in the Middle Ebro Valley', in Barker and Lloyd (1991: 37–46).
- Burnett, A. M. (1989). 'The Beginnings of Roman Coinage', *Annali dell'Istituto Italiano di Numismatica* 36, 33–64.
- and M. H. Crawford (eds.) (1987). *The Coinage of the Roman World in the Late Republic* (Oxford).
- Bussi, S., and D. Foraboschi (2001). 'Dominio romano e forza lavoro schiavile', *Mediterraneo antico* 4, 449–58.
- Buttrey, T. V. (1993, 1994). 'Calculating Ancient Coin Production', *NC* 153, 335–51; 154, 341–52.
- Cabanes, P. (1974). 'Les inscriptions du théâtre de Bouthrôtos', in *Actes du colloque 1972 sur l'esclavage*, 105–209.
- Caccamo Caltabiano, M., and P. Radici Colace (1992). *Dalla premoneta alla moneta* (Pisa).
- Callot, O. (1984). *Huilieries antiques de Syrie du Nord* (Paris).
- Callu, J.-P. (1969). *La politique monétaire des empereurs romains, de 238 à 311* (Paris).
- (1993). 'I commerci oltre i confini dell'Impero', in Schiavone (1988–93: 3.1, 487–524).
- Calvert, P. (1982). *The Concept of Class: An Historical Introduction* (London).
- Calzolari, M. (1981). *La pianura modenese nell'età romana: ricerche di topografia e di toponomastica* (Modena).
- Cambi, F. (2001). 'Calabria romana: paesaggi tardo repubblicani nel territorio brindisino', in Lo Cascio and Storch Marino (2001: 363–90).
- Cameron, A. (1932). 'The Exposure of Children and Greek Ethics', *Classical Review* 46, 105–14.
- Cameron, Alan (1992). Review of D. Roques, *Synésios de Cyrène* and *Études sur la correspondance de Synésios*, *JRA* 5, 419–30.
- Cameron, Averil (1982). Review of De Ste. Croix (1981). *Times Higher Education Supplement* (19 February), 12.
- Camodeca, G. (1999). *Tabulae Pompeianae Sulpiciorum* (Rome, 2 vols).
- (2003). 'Il credito negli archivi campani: il caso di Puteoli e di Herculaneum', in Lo Cascio (2003: 69–98).
- Capogrossi, L., A. Giardina, and A. Schiavone (eds.) (1978). *Analisi marxista e società antiche* (Rome).

- Carandini, A. (1970). 'Produzione agricola e produzione ceramica nell'Africa di età imperiale', in *Omaggio a Ranuccio Bianchi Bandinelli = Seminario di Archeologia e Storia dell'Arte Greca e Romana dell'Università di Roma. Studi Miscellanei* 15, 97–119.
- (1979). *L'anatomia della scimmia: la formazione economica della società prima del capitale* (Turin).
- (1980). 'Roma imperialistica: un caso di sviluppo precapitalistico', in D'Arms and Kopff (1980: 11–19).
- (1983). 'Columella's Vineyard and the Rationality of the Roman Economy', *Opus* 2, 177–204.
- (1985). *Settefinestre: una villa schiavistica nell'Etruria romana* (Modena, 3 vols).
- (1988). *Schiavi in Italia: gli strumenti pensanti dei Romani fra tarda Repubblica e medio Impero* (Rome).
- Carlsen, J., P. Orsted, and J. E. Skydsgaard (eds.) (1994). *Land Use in the Roman Empire* (Acta Romana Instituti Danici Suppl. 22) (Rome).
- Carrié, J.-M. (1980). Comment in Pekáry (1980).
- (1994). 'Les échanges commerciaux et l'économie antique tardive', in *Les échanges dans l'antiquité: le rôle de l'état* (Entretiens d'Archéologie et d'Histoire 1) (Saint-Bertrand-de-Comminges), 175–211.
- (2003a). 'Nihil habens praeter quod ipso die vestiebatur: comment définir le seuil de pauvreté à Rome?', in *Consuetudinis amor: fragments d'histoire romaine (IIe–VIe siècles) offerts à Jean-Pierre Callu* (Rome), 71–102.
- (2003b). 'Solidus et crédit: qu'est-ce que l'or a pu changer?', in Lo Cascio (2003: 265–79).
- Cary, M. (1949). *The Geographic Background of Greek and Roman History* (Oxford).
- Casson, L. (1971). *Ships and Seamanship in the Ancient World* (Princeton).
- (1984a). 'Egypt, Africa, Arabia, and India: Patterns of Seaborne Trade in the First Century A.D.', *BASP* 21, 39–47.
- (1984b). *Ancient Trade and Society* (Detroit).
- (1986a). 'P.Vindob. G 40822 and the Shipping of Goods from India', *BASP* 23 (1986), 73–9.
- (1986b). 'New Light on Maritime Loans: P.Vindob. G 19792 (= SB VI 9571)', in *Studies in Roman Law in Memory of A. Arthur Schiller* (Columbia Studies in the Classical Tradition 13) (Leiden), 11–17.
- (ed.) (1989). *The Periplus Maris Erythraei: Text with Introduction, Translation and Commentary* (Princeton).
- Castagnoli, F. (1980). 'Installazioni portuali a Roma', in D'Arms and Kopff (1980: 35–42).
- Cébeillac-Gervasoni, M. (1991). 'Les travaux publics à la fin de république, dans le Latium et la Campanie du Nord: la place de la classe dirigeante et des familles de notables', *Cahiers du Centre Gustave-Glotz* 2, 188–208.
- Cels, J. (1978). 'Un problème controversé: l'origine d'un flamine de Narbonne, Sextus Fadius Secundus Musa', *Eos* 66, 107–21.

- Cera, G. (1995). 'Scali portuali nel sistema idroviario padano in epoca romana', in L. Quilici and S. Quilici Gigli (eds.), *Agricoltura e commerci nell'Italia antica* (Atlante tematico di topografia antica, Suppl. 1) (Rome), 179–98.
- Češka, J. (1959). *Diferenciace otroku v Italii v prvních dvou stoletích principatu* (Prague).
- Champlin, E. (1991). *Final Judgments: Duty and Emotion in Roman Wills, 200 B.C.–A.D. 250* (Berkeley).
- Chaniotis, A. (1988). 'Vinum Creticum Excellens: zum Weinhandel Kretas', *MBAH* 7.1, 62–89.
- Cherry, D. (1993). 'Hunger at Rome in the Late Republic', *Échos du monde classique* n.s. 12, 433–50.
- Chevallier, R. (1980). *La romanisation de la celtique du Pô: géographie, archéologie et histoire en Cisalpine* (Paris).
- (1983). *La romanisation de la celtique du Pô: essai d'histoire provinciale* (Rome).
- Chilver, G. E. F. (1941). *Cisalpine Gaul* (Oxford).
- Chioffi, L. (1999). *Caro: il mercato della carne nell'Occidente romano, riflessi epigrafici ed iconografici* (Rome).
- Chorley, R. J., and P. Haggett (1968). *Socio-Economic Models in Geography* (London).
- Christ, K. (1980). 'Grundfragen der römischen Sozialstruktur', in *Studien zur antiken Sozialgeschichte: Festschrift Friedrich Vittinghoff* (Cologne), 197–228.
- Christiansen, E. (2004). *Coinage in Roman Egypt: The Hoard Evidence* (Aarhus).
- Ciarallo, A., and E. De Carolis (eds.) (1999). *Homo Faber: natura, scienza e tecnica nell'antica Pompei* (Milan).
- Cipolla, C. M. (1993). *Before the Industrial Revolution*, 3rd edn (London).
- Clark, C., and M. Haswell (1970). *The Economics of Subsistence Agriculture*, 4th edn (London).
- Clauss, M. (1973). 'Probleme der Lebensalterstatistiken aufgrund römischer Grabinschriften', *Chiron* 3, 395–417.
- Coale, A. J., and P. Demeny (1983). *Regional Model Life Tables and Stable Populations*, 2nd edn (New York).
- and N. W. Rives (1973). 'A Statistical Reconstruction of the Black Population of the United States 1880–1970: Estimates of True Numbers by Age and Sex, Birth Rates, and Total Fertility', *Population Index* 39, 3–36.
- Coarelli, F. (1965). 'Romana arte' (section 11.B), in *EAA* 6, 1010–24.
- (1977). 'Public Building in Rome between the Second Punic War and Sulla', *PBSR* 45, 1–23.
- (1981). 'La Sicilia tra la fine della guerra annibalica e Cicerone', in Giardina and Schiavone (1981: 1.1–18).
- (1983). 'Il commercio delle opere d'arte in età tardo-repubblicana', *Dial.Arch.* 3.1, 45–53; repr. in *Revixit Ars* (Rome, 1996), 312–26.
- (1987). '"Magistri capitolini" e mercanti di schiavi nella Roma repubblicana', *Index* 15, 175–90.
- (1988). *Il Foro Boario dalle origini alla fine della repubblica* (Rome).
- (1994). 'Saturnino, Ostia e l'annona: il controllo e l'organizzazione del commercio del grano tra II e I secolo a.C.', in *Le ravitaillement en blé de Rome* (Naples), 35–45.
- (1995). 'Forum Boarium', in *LTUR* 2, 295–7.

- Coarelli, F. (1997). 'La consistenza della città nel periodo imperiale: *pomerium via insulae*', in *La Rome impériale: démographie et logistique* (Rome), 89–119.
- (2005). 'L'"Agora des Italiens": lo statarion di Delo?', *JRA* 18, 196–212.
- Cockle, H. (1981). 'Pottery Manufacture in Roman Egypt: A New Papyrus', *JRS* 71, 87–97.
- Cocks, A. H. (1921). 'A Romano-British Homestead in the Hambleden Valley, Bucks', *Archaeologia* 71, 141–98.
- Cohen, B. (1975). 'La notion d'"ordo" dans la Rome antique', *Bulletin de l'Association G. Budé*, 259–82.
- Cohen, E. E. (1992). *Athenian Economy and Society: A Banking Perspective* (Princeton).
- Cohen, G. A. (1978). *Karl Marx's Theory of History: A Defence* (Princeton).
- Coles, R. A. (2001). '4587–90. Transfers of Credit in Grain', *P.Oxy.* 67, 152–63.
- Colls, D., R. Etienne, R. Lequément, B. Liou, and F. Mayet (1977). *L'Épave Port-Vendres II et le commerce de la Bétique à l'époque de Claude* (Archaeonautica 1) (Paris).
- — and F. Mayet (1988). 'Des tonneaux dans l'épave Port-Vendres III?', *Cahiers d'histoire* 33 (1988), 309–19.
- Comfort, H. (1973). 'Terra sigillata', *EAA Supplemento*, 803–35.
- Corbier, M. (1981). 'Proprietà e gestione della terra: grande proprietà fondiaria ed economia contadina', in Giardina and Schiavone (1981: 1.427–44).
- (2006). *Donner à voir, donner à lire: mémoire et communication dans la Rome ancienne* (Paris).
- Corbo, C. (2006). *Paupertas: la legislazione tardoantica* (Naples).
- Corcoran, S. (1996). *The Empire and the Tetrarchs: Imperial Pronouncements and Government, AD 254–324* (Oxford).
- and J. DeLaine (1994). 'The Unit Measurement of Marble in Diocletian's Price Edict', *JRA* 7, 263–73.
- Cornell, T. J. (1995). *The Beginnings of Rome* (London).
- Cottier, M., M. H. Crawford, C. V. Crowther, J.-L. Ferrary, B. M. Levick, O. Salomies, and M. Wörrle (eds.) (2008). *The Customs Law of Asia* (Oxford).
- Courtney, E. (1980). *A Commentary on the Satires of Juvenal* (London).
- Cracco Ruggini, L. (1961). *Economia e società nell' 'Italia Annonaria'* (Milan).
- (1980). 'Nuclei immigrati e forze indigene in tre grandi centri commerciali dell'impero', in D'Arms and Kopff (1980: 55–76).
- Craton, M. (1976). 'Death, Disease and Medicine on the Jamaican Slave Plantations: The Example of Worthy Park, 1767–1838', *Histoire Sociale—Social History* 9, 237–55; repr. in Beckles and Shepherd (1991: 183–96).
- Crawford [Thompson], D. J. (1976). 'Imperial Estates', in M. I. Finley (ed.), *Studies in Roman Property* (Cambridge), 35–70.
- Crawford, M. H. (1969). *Roman Republican Coin Hoards* (London).
- (1974). *Roman Republican Coinage* (Cambridge, 2 vols).
- (1977a). 'Republican Denarii in Romania: The Suppression of Piracy and the Slave-Trade', *JRS* 67, 117–24.
- (1977b). 'Rome and the Greek World: Economic Relationships', *EconHR* 30, 42–52.
- (1980). 'Economia imperiale e commercio estero', in *Tecnologia, economia e società*, 207–18.

- Crawford, M. H. (1985). *Coinage and Money under the Roman Republic* (London).
- et al. (eds.) (1996). *Roman Statutes* (London, 2 vols).
- and J. Reynolds (1975). 'The Publication of the Prices Edict: A New Inscription from Aezani', *JRS* 65, 160–63.
- Cremaschi, M., and A. Marchesini (1978). 'L'evoluzione di un tratto di pianura padana (prov. Reggio e Parma) in rapporto agli insediamenti ed alla struttura geologica tra il XV sec. a.C. ed il sec. XI d.C.', *Archeologia medievale* 5, 542–62.
- Crook, J. (1967). *Law and Life of Rome, 80 B.C.–AD. 212* (London).
- Crook, J. A. (1992). Review of Champlin (1991), *JRS* 82, 232–4.
- (1994). 'The Development of Roman Private Law', in *Cambridge Ancient History* 9, 2nd edn (Cambridge), 531–63.
- Crosby, A. W. (1986). *Ecological Imperialism: The Biological Expansion of Europe, 900–1900* (Cambridge).
- Curk, I. M. (1990). 'Welche Bevölkerungsschichten haben vorwiegend Sigillaten (aus Rheinzabern) gebraucht? Beobachtungen aus nord-west Jugoslawien', *Acta RCRF* 27–8, 29–33.
- Curti, E., E. Dench, and J. Patterson (1996). 'The Archaeology of Central and Southern Italy: Recent Trends and Approaches', *JRS* 86, 170–89.
- Curtin, P. D. (1969). *The Atlantic Slave Trade: A Census* (Madison).
- Curtis, R. I. (1978). *The Production and Commerce of Fish Sauce in the Western Roman Empire: A Social and Economic Study* (dissertation, University of Maryland).
- Cuvigny, H. (2005). 'Πέμπειν/ ἀγοράζειν τῆς τιμῆς dans l'épistolographie grecque d'Égypte', *Chronique d'Égypte* 80, 270–76.
- Dąbrowski, K., and J. Kolendo (1972). 'Les épées romaines découvertes en Europe centrale et septentrionale', *Archaeologia Polona* 13, 59–109.
- Daremberg, C., and C. E. Ruelle (eds.) (1879). *Oeuvres de Rufus d'Ephèse* (Paris).
- D'Arms, J. H. (1970). *Romans on the Bay of Naples: A Social and Cultural Study of the Villas and their Owners from 150 BC to AD 400* (Cambridge, MA).
- (1974). 'Puteoli in the Second Century of the Roman Empire: A Social and Economic Study', *JRS* 64, 104–24.
- (1977). 'M. I. Rostovtzeff and M. I. Finley: The Status of Traders in the Roman World', in *Ancient and Modern: Essays in Honor of G. F. Else* (Ann Arbor), 159–79.
- (1981). *Commerce and Social Standing in Ancient Rome* (Cambridge, MA).
- (1984). 'Control, Companionship, and Clientela: Some Social Functions of the Roman Communal Meal', *Échos du Monde Classique* n.s. 3, 327–48.
- and E. C. Kopff (eds.) (1980). *The Seaborne Commerce of Ancient Rome: Studies in Archaeology and History* (Rome) = *Memoirs of the American Academy in Rome* 36 (1980).
- Daubigney, A., and F. Favory (1974). 'L'esclavage en Narbonnaise et Lyonnaise d'après les sources épigraphiques', in *Actes du colloque 1972 sur l'esclavage*, 315–88.
- Davies, G. (1994). *A History of Money from Ancient Times to the Present Day* (Cardiff).
- Davies, O. (1935). *Roman Mines in Europe* (Oxford).
- De Callatay, F. (2005). 'The Graeco-Roman Economy in the Super Long-Run: Lead, Copper, and Shipwrecks', *JRA* 18, 361–72.
- de Cecco, M. (1985). 'Monetary Theory and Roman History', *Journal of Economic History* 45, 809–22.

- Degler, C. N. (1971). *Neither Black Nor White* (New York).
- De Laet, S. J. (1949). *Portorium: étude sur l'organisation douanière chez les romains* (Bruges).
- De Laurenzi, A. (ed.) (2004). *Un tesoro dal mare: il tesoretto di Rimigliano dal restauro al museo* (n.p.).
- Delia, D. (1988). 'The Population of Roman Alexandria', *TAPhA* 118, 275–91.
- De Ligt, L. (1990, 1991). 'Demand, Supply, Distribution: The Roman Peasantry between Town and Countryside', *MBAH* 9.2, 24–56; 10.1, 33–77.
- (1993). *Fairs and Markets in the Roman Empire* (Amsterdam).
- (2000). 'Governmental Attitudes towards Markets and *Collegia*', in Lo Cascio (2000: 237–52).
- and P. W. de Neeve (1988). 'Ancient Periodic Markets: Festival and Fairs', *Athenaeum* 56, 391–416.
- Delmaire, R. (1989). *Largesses sacrées et res privata: l'aerarium impériale et son administration du IVe au Ve siècle* (Rome).
- De Martino, F. (1980). *Storia economica di Roma antica* (Florence).
- (1990). 'Economia dell'oliveto nell'Italia romana', *Parola del passato* 45, 321–47.
- de Neeve, P. W. (1984). *Colonus: Private Farm-Tenancy in Roman Italy during the Republic and the Early Principate* (Amsterdam).
- Deng, K. G. (2000). 'A Critical Survey of Recent Research in Chinese Economic History', *EconHR* 53, 1–28.
- Department of Commerce, Bureau of the Census (1918). *Negro Population 1790–1915* (Washington, DC).
- De Roover, R. (1948). *Money, Banking, and Credit in Mediaeval Bruges* (Cambridge).
- De Ruyt, C. (1983). *Macellum: marché alimentaire des Romains* (Louvain-le-Neuve).
- De Salvo, L. (1992). *Economia privata e pubblici servizi nell'impero romano: i corpora naviculariorum* (Messina).
- Desbat, A. (2000). 'Les ateliers lyonnais et viennois à l'époque d'Auguste et leur rapport avec les ateliers padans', in Brogiolo and Olcese (2000: 79–92).
- and S. Martin-Kilcher (1989). 'Les amphores sur l'axe Rhône-Rhin à l'époque d'Auguste', in *Amphores romaines*, 339–65.
- De Siena, A., and L. Giardino (2001). 'Trasformazioni delle aree urbane e del paesaggio agrario in età romana nella Basilicata sudorientale', in Lo Cascio and Storch Marino (2001: 129–67).
- De Ste. Croix, G. E. M. (1956). 'Greek and Roman Accounting', in A. C. Littleton and B. S. Yamey (eds.), *Studies in the History of Accounting* (London), 14–74.
- (1974). 'Ancient Greek and Roman Maritime Loans', in H. Edey and B. S. Yamey (eds.), *Debits, Credits, Finance and Profits* (London), 41–59.
- (1981). *The Class Struggle in the Ancient Greek World* (London).
- de Vries, J., and A. van der Woude (1997). *The First Modern Economy* (Cambridge).
- Dickman, M. (1975). 'Demographic Consequences of Infanticide in Man', *Annual Review of Ecology and Systematics* 6, 107–37.
- Di Porto, A. (1984). *Impresa collettiva e schiavo 'manager' in Roma antica (II sec. a.C.–II sec. d.C.)* (Milan).
- Dixon, S. (2001). *Reading Roman Women* (London).

- Domergue, C. (1983). *La mine antique d'Aljustrel (Portugal) et les tables de bronze de Vipasca* (Paris).
- (1987). *Catalogue des mines et des fonderies antiques de la Péninsule Ibérique* (Madrid, 3 vols).
- (1990). *Les mines de la péninsule ibérique dans l'antiquité romaine* (Paris and Rome).
- (1994a). 'Production et commerce des métaux dans le monde romain: l'exemple des métaux hispaniques d'après les lingots', in *Epigrafia della produzione*, 61–91.
- (1994b). 'L'état romain et le commerce des métaux à la fin de la République et sous le Haut-Empire', in *Économie antique*, 99–113.
- Donatuti, G. (1934). 'La schiavitù per condanna', *Bullettino dell'Istituto di Diritto Romano* 42, 219–37.
- Douglas, M., and B. Isherwood (1979). *The World of Goods* (London).
- Drewes, P. (1970). *Die Bankdiagraphie in den gräko-ägyptischen Papyri* (Freiburg im Breisgau).
- Drexhage, H.-J. (1982). 'Beitrag zum Binnenhandel im römischen Aegypten aufgrund der Torzollquittungen und Zollhausabrechnungen des Faijum', *MBAH* 1.1, 61–84.
- (1991a). *Preise, Mieten/Pachten, Kosten und Löhne im römischen Ägypten bis zum Regierungsantritt Diokletians* (St Katharinen).
- (1991b). 'Einige Bemerkungen zu den ἔμποροι und κάπηλοι im römischen Ägypten (1.–3. Jh.n.Chr.)', *MBAH* 10.2, 28–46.
- H. Konen, and K. Ruffing (2002). *Die Wirtschaft des römischen Reiches (1.–3. Jh.): eine Einführung* (Berlin).
- Drinkwater, J. F. (1977–78). 'Die Secundinier von Igel und die Woll- und Textilindustrie in Gallia Belgica: Fragen und Hypothesen', *Trierer Zeitschrift* 40–41, 107–25.
- Duby, G. (1974). *The Early Growth of the European Economy* (trans. H. B. Clark) (London); originally published as *Guerriers et paysans, VII–XIII siècle* (Paris, 1973).
- Duncan-Jones, R. P. (1974). *The Economy of the Roman Empire: Quantitative Studies* (Cambridge; 2nd edn Cambridge, 1982).
- (1976). 'The Price of Wheat in Roman Egypt under the Principate', *Chiron* 6, 241–62.
- (1977). 'Giant Cargo-Ships in Antiquity', *CQ* 27, 331–2.
- (1980). 'Demographic Change and Economic Progress under the Roman Empire', in *Tecnologia, economia e società*, 67–80.
- (1987). 'Weight Loss as an Index of Coin-Wear in Currency of the Roman Principate', in G. Depeyrot, T. Hackens, and G. Moucharte (eds.), *Rythmes de la production monétaire, de l'antiquité à nos jours* (Louvain-la-Neuve), 237–56.
- (1990). *Structure and Scale in the Roman Economy* (Cambridge).
- (1994). *Money and Government in the Roman Empire* (Cambridge).
- (2003). 'Roman Coin Circulation and the Cities of Vesuvius', in Lo Cascio (2003: 161–80).
- Durand, J. D. (1959–60). 'Mortality Estimates from Roman Tombstone Inscriptions', *American Journal of Sociology* 65, 365–73.
- Durliat, J. (1990). *De la ville antique à la ville byzantine: le problème des subsistances* (Rome).

- Dusanić, S. (1977). 'Aspects of Roman Mining in Noricum, Pannonia, Dalmatia and Moesia Superior', *ANRW* 2.6, 52–94.
- Earle, T. K., and J. E. Ericson (eds.) (1977). *Exchange Systems in Prehistory* (New York).
- Economie antique. Les échanges dans l'antiquité: le rôle de l'État* (Saint-Bertrand-de-Comminges, 1994).
- Economie antique. Prix et formation des prix dans les économies antiques* (Saint-Bertrand-de-Comminges, 1997).
- Eder, W. (1984). Review of De Ste. Croix (1981), *CPh* 79, 341–9.
- Eggers, H. J. (1951). *Der römische Import im freien Germanien* (Hamburg).
- Eiring, J., and J. Lund (eds.) (2004). *Transport Amphorae and Trade in the Eastern Mediterranean: Acts of the International Colloquium at the Danish Institute at Athens, September 26–29, 2002* (Aarhus).
- Eltis, D., and S. L. Engerman (1993). 'Fluctuations in Sex and Age Ratios in the Transatlantic Slave Trade, 1663–1864', *EconHR* 46, 308–23.
- and D. Richardson (1997). 'West Africa and the Transatlantic Slave Trade: New Evidence of Long-Run Trends', in Eltis and Richardson (eds.), *Routes to Slavery: Direction, Ethnicity, and Mortality in the Transatlantic Slave Trade* (London), 16–35.
- Empereur, J.-Y., and Y. Garlan (eds.) (1986). *Recherches sur les amphores grecques* (*BCH* Suppl. 13) (Athens), 31–6.
- and M. Picon (1989). 'Les régions de production d'amphores impériales en Méditerranée orientale', in *Amphores romaines*, 223–48.
- Engelmann, H., and D. Knibbe (1989). 'Das Zollgesetz der Provinz Asia', *Epigraphica Anatolica* 14 (whole issue).
- Epigrafia della produzione e della distribuzione: actes de la VIIe Rencontre franco-italienne sur l'épigraphie du monde romain* (Rome, 1994).
- Erdkamp, P. (1999). 'Agriculture, Underemployment, and the Cost of Rural Labour in the Roman World', *CQ* 49, 556–72.
- (2000). 'Feeding Rome, or Feeding Mars? A Long-Term Approach to C. Gracchus' *lex frumentaria*', *Ancient Society* 30, 53–70.
- (2005). *The Grain Market in the Roman Empire: A Social, Political and Economic Study* (Cambridge).
- Erim, K. T., J. Reynolds, and M. H. Crawford (1971). 'Diocletian's Currency Reform: A New Inscription', *JRS* 61, 171–7.
- Espérandieu, E. (1907–66). *Recueil général des bas-reliefs de la Gaule romaine* (Paris, 15 vols).
- Etienne, R. (1951). "'Quadragesima" ou "quingagesima Hispaniarum"?", *RÉA* 53, 62–70.
- (1966). *La vie quotidienne à Pompéi* (Paris).
- Evans, P. B., D. Rueschemeyer, and T. Skocpol (1985). 'On the Road toward a More Adequate Understanding of the State', in eid. (eds.), *Bringing the State Back In* (Cambridge), 347–66.
- Fant, J. C. (1989). *Cavum Antrum Phrygiae: The Organization and Operations of the Roman Imperial Marble Quarries in Phrygia* (Oxford).
- (1993). 'Ideology, Gift, and Trade: A Distribution Model for the Roman Imperial Marbles', in Harris (1993d: 145–70).

- Fant, J. C. (2008). 'Quarrying and Stoneworking', in Oleson (2008: 121–35).
- Fentress, E. (1990). 'The Economy of an Inland City: Sétif', in *L'Afrique dans l'Occident romain (I^{er} siècle av.J.-C.—IV^e siècle ap.J.-C.)* (Rome), 117–28.
- Findlay, R. (1990). *The 'Triangular Trade' and the Atlantic Economy of the Eighteenth Century: A Simple General-Equilibrium Model* (Essays in International Finance 177) (Princeton).
- Fink, R. O. (1971). *Roman Military Records on Papyrus* (Cleveland).
- Finley, M. I. (1951). *Studies in Land and Credit in Ancient Athens, 500–200 B.C.* (New Brunswick).
- (1962). 'The Black Sea and Danubian Regions and the Slave Trade in Antiquity', *Klio* 40, 51–9; repr. in Finley (1981: 167–75).
- (1968). *Aspects of Antiquity* (New York).
- (1973). *The Ancient Economy* (Berkeley; 2nd edn 1985).
- (1976). 'Introduction', in Finley (ed.), *Studies in Roman Property* (Cambridge), 1–6.
- (1981). *Economy and Society in Ancient Greece* (London).
- (1983). *Politics in the Ancient World* (Cambridge).
- (1985). *Ancient History: Evidence and Models* (London).
- Finn, R. (2006). 'Portraying the Poor: Descriptions of Poverty in Christian Texts from the Late Roman Empire', in Atkins and Osborne (2006: 130–44).
- Fischer, S., R. Dornbusch, and R. Schmalensee (1988). *Introduction to Macroeconomics*, 2nd edn (New York).
- Fogel, R. W. (2004). *Escape from Hunger and Premature Death, 1700–2100: Europe, America, and the Third World* (Cambridge).
- and S. L. Engerman (1974). *Time on the Cross* (Boston, 2 vols).
- Fontaine, S. D., and D. Foy (2007). 'L'épave Ouest-Embiez 1, Var: le commerce maritime de verre brut et manufacturé en Méditerranée occidentale dans l'Antiquité', *Revue archéologique de Narbonnaise* 40, 235–68.
- Foraboschi, D. (2003). 'Free Coinage e scarsenza di moneta', in Lo Cascio (2003: 231–44).
- and A. Gara (1982). 'L'economia dei crediti in natura (Egitto)', *Athenaeum* 60, 69–83.
- Forni, G. (1953). *II reclutamento delle legioni da Augusto a Diocleziano* (Milan).
- Foxhall, L. (1990). 'The Dependent Tenant: Land Leasing and Labour in Italy and Greece', *JRS* 80, 97–114.
- and H. A. Forbes (1982). 'Sitometreia: The Role of Grain as a Staple Food in Classical Antiquity', *Chiron* 12, 41–90.
- Frank, T. (1927). *An Economic History of Rome*, 2nd edn (New York).
- (1933). *An Economic Survey of Ancient Rome*, vol. 1 (Baltimore).
- Frasca, R. (1996). *Educazione e formazione a Roma: storia, testi, immagini* (Bari).
- Fraser, P. M. (1972). *Ptolemaic Alexandria* (Oxford, 3 vols).
- Frayn, J. M. (1984). *Sheep-Rearing and the Wool Trade in Italy during the Roman Period* (Liverpool).
- Frazer, J. G. (1911). *The Dying God* (= *The Golden Bough* III), 3rd edn (London).
- Frederiksen, M. W. (1959). 'Republican Capua: A Social and Economic Study', *PBSR* 27, 80–130.
- (1966). 'Caesar, Cicero and the Problem of Debt', *JRS* 56, 128–41.

- Frederiksen, M. W. (1970–71). 'The Contribution of Archaeology to the Agrarian Problem in the Gracchan Period', *Dial.Arch.* 4–5, 330–57.
- (1981). 'I cambiamenti delle strutture agrarie nella tarda repubblica: la Campania', in Giardina and Schiavone (1981: 1.265–87).
- Frere, S. (1967). *Britannia* (London).
- Freyberg, H.-U. von (1989). *Kapitalverkehr und Handel im römischen Kaiserreich* (Freiburg im Breisgau).
- Frier, B. W. (1978). 'Cicero's Management of his Urban Properties', *Classical Journal* 74, 1–6.
- (1980). *Landlords and Tenants in Imperial Rome* (Princeton).
- (1983). 'Roman Law and the Wine Trade: The Problem of "Vinegar Sold as Wine"', *ZSS* 100, 257–95.
- (1985). *The Rise of the Roman Jurists* (Princeton).
- (1991). Review of Jongman (1988), *JRA* 4, 243–47.
- (1994). 'Natural Fertility and Family Limitation in Roman Marriage', *CPh* 89, 318–33.
- (2000). 'Demography', in *CAH* 11, 2nd edn, 787–816.
- Friesen, S. J. (2004). 'Poverty in Pauline Studies: Beyond the So-Called New Consensus', *Journal for the Study of the New Testament* 26, 323–61.
- Frova, A. (1973). 'Architettura, arte e artigianato nella Cisalpina romana', in *Aquileia e Milano* (Antichità Altoadriatiche 4) (Udine), 105–23.
- Fülle, G. (1997). 'The Internal Organization of the Arretine *Terra Sigillata* Industry: Problems of Evidence and Interpretation', *JRS* 87, 111–55.
- Gabba, E. (ed.) (1958). *Appiani Bellorum Civilium Liber Primus* (Florence).
- (1972a). Review of *Recherches sur les structures sociales* (1970), *Rivista di Filologia ed Istruzione Classica* 100, 183–7.
- (1972b). 'Urbanizzazione e rinnovamenti urbanistici nell'Italia centromeridionale del I sec. a.C.', *SCO* 21, 73–112; repr. in *Italia Romana* (Como, 1994), 63–103.
- (1975). 'Mercati e fiere nell'Italia Romana', *SCO* 24, 141–63.
- (1979). 'Sulle strutture agrarie dell'Italia romana', in Gabba and Pasquinucci (1979: 13–73).
- (1981). 'Ricchezza e classe dirigente romana fra III e I a.C.', *Rivista storica italiana* 93, 541–58.
- (1988). *Del buon uso della ricchezza* (Milan).
- (1989). 'Rome and Italy in the Second Century BC', in *CAH* 8, 2nd edn, 197–243.
- and M. Pasquinucci (1979). *Strutture agrarie e allevamento transumante nell'Italia romana (III sec. a.C.)* (Pisa).
- Gabler, D. (1983). 'Rapporti commerciali fra Italia e Pannonia in età romana', *Archeologia classica* 35, 88–117.
- Gaitzsch, W. (1985). 'Werkzeuge und Geräte in der römischen Kaiserzeit: eine Übersicht', in *ANRW* 2, 12, 3, 170–204.
- Gallant, T. W. (1991). *Risk and Survival in Ancient Greece: Reconstructing the Rural Domestic Economy* (Stanford).
- Galsterer, H. (1994). 'Kunstraub und Kunsthandel im republikanischen Rom', in G. Hellenkemper Salies (ed.), *Das Wrack: der antike Schiffsfund von Mahdia* (Cologne), 2.857–66.

- Garnsey, P. D. A. (1970). *Social Status and Legal Privilege in the Roman Empire* (Oxford).
- (1978). 'Rome's African Empire under the Principate', in idem and C. R. Whittaker (eds.), *Imperialism in the Ancient World* (Cambridge), 223–54.
- (ed.) (1980). *Non-Slave Labour in the Greco-Roman World* (Cambridge).
- (1981). 'Independent Freedmen and the Economy of Roman Italy under the Principate', *Klio* 63, 359–71.
- (1983). 'Grain for Rome', in Garnsey et al. (1983: 118–30).
- (1988). *Famine and Food Supply in the Graeco-Roman World: Responses to Risk and Crisis* (Cambridge).
- (1996). *Ideas of Slavery from Aristotle to Augustine* (Cambridge).
- (1998). *Cities, Peasants and Food in Classical Antiquity: Essays in Social and Economic History* (Cambridge).
- (1999). *Food and Society in Classical Antiquity* (Cambridge).
- T. Gallant, and D. Rathbone (1984). 'Thessaly and the Grain Supply of Rome during the Second Century B.C.', *JRS* 74, 30–44.
- K. Hopkins, and C. R. Whittaker (eds.) (1983). *Trade and the Ancient Economy* (London).
- and D. Rathbone (1985). 'The Background to the Grain Law of Gaius Gracchus', *JRS* 75, 20–25.
- and R. Saller (1987). *The Roman Empire: Economy, Society and Culture* (London).
- and C. R. Whittaker (eds.) (1983). *Trade and Famine in Classical Antiquity* (Cambridge).
- (1998). 'Trade, Industry and the Urban Economy', in *CAH* 13 (337–425 AD), 312–37.
- and G. Woolf (1990). 'Patronage of the Rural Poor in the Roman World', in A. Wallace-Hadrill (ed.), *Patronage in Ancient Society* (London), 153–70.
- Gehrke, H.-J. (1983). Review of De Ste. Croix (1981), *Göttingische Gelehrte Anzeigen* 235, 33–53.
- Gelzer, M. (1968). *Caesar, Politician and Statesman* (trans. P. Needham) (Oxford); originally published as *Caesar, der Politiker und Staatsmann*, 6th edn (Wiesbaden, 1960).
- Geroussi-Bendermacher, E. (2005). 'Propriété foncière et inventaire d'esclaves: un texte inédit de Perissa (Thera) tardo-antique', in V. I. Anastasiadis and P. N. Doukellis (eds.), *Esclavage antique et discriminations socio-culturelles* (Bern), 335–58.
- Giardina, A. (1981). 'Allevamento ed economia della selva in Italia meridionale: trasformazioni e continuità', in Giardina and Schiavone (1981: 1.87–113).
- (ed.) (1986). *Società romana e impero tardoantico* (Rome, 4 vols).
- (1993a). 'The Merchant', in Giardina 1993b [1989], 245–71.
- (ed.) (1993b). *The Romans* (trans. L. Cochrane) (Chicago); originally published as *L'uomo romano* (Rome, 1989).
- (2007). 'The Transition to Late Antiquity', in Scheidel et al. (2007: 743–68).
- and A. Schiavone (eds.) (1981). *Società romana e produzione schiavistica* (Bari, 3 vols).

- Gibbins, D. J. L., and A. J. Parker (1986). 'The Roman Wreck of c. AD 200 at Plemmirio, near Siracusa (Sicily): Interim Report', *International Journal of Nautical Archaeology* 15, 267–304.
- Giordano, C. (1970). 'Nuove tavolette cerate pompeiane', *RAAN* 45, 211–31.
- (1971). 'Nuove tavolette cerate pompeiane', *RAAN* 46, 183–97.
- Giovannini, A. (1978). *Rome et la circulation monétaire en Grèce au IIe siècle av.J.-C.* (Basel).
- (1985). 'Le sel et la fortune de Rome', *Athenaeum* 63, 373–87.
- (1995). 'Catilina et le problème des dettes', in *Leaders and Masses in the Roman World: Studies in Honor of Zvi Yavetz* (Leiden and New York), 15–32.
- Glötz, G. (1906). *Études sociales et juridiques sur l'antiquité grecque* (Paris).
- Godłowski, K. (1985). 'Der römische Handel in die Germania libera aufgrund der archäologischen Quellen', in *Untersuchungen zu Handel und Verkehr der vor- und frühgeschichtlichen Zeit in Mittel- und Nordeuropa I* (= Abh. Göttingen, 3rd series, no. 143) (Göttingen, 1985), 33–66.
- Goldsmith, R. W. (1987). *Premodern Financial Systems: A Historical Comparative Study* (Cambridge).
- Goldstone, J. (2002). 'Efflorescences and Economic Growth in World History: Rethinking the Rise of the West and the British Industrial Revolution', *Journal of World History* 13, 323–89.
- González, J. (1986). 'The *Lex Irnitana*: A New Copy of the Flavian Municipal Law', *JRS* 76, 147–243.
- González Roman, C. (1977). 'Las clases sociales. ¿Un problema terminológico o ideológico en las investigaciones sobre la antigüedad?', *Memorias de historia antigua* 1, 33–40.
- Goody, J. (1976). *Production and Reproduction: A Comparative Study of the Domestic Domain* (Cambridge).
- J. Thirsk, and E. P. Thompson (eds.) (1976). *Family and Inheritance: Rural Society in Western Europe, 1200–1800* (Cambridge).
- Gorton, G. (1985). 'Clearinghouses and the Origin of Central Banking in the United States', *Journal of Economic History* 45, 277–83.
- Gowers, E. (1993). *The Loaded Table: Representations of Food in Roman Literature* (Oxford).
- Grace, V. (1955). 'Ancient Greek Wine Jar Fragments', *Year Book of the American Philosophical Society*, 321–6.
- Gralfs, B. (1988). *Metallverarbeitende Produktionsstätten in Pompeji* (Oxford).
- Greene, K. (1986). *The Archaeology of the Roman Economy* (London).
- (1990). 'Perspectives on Roman Technology', *Oxford Journal of Archaeology* 9.2, 209–19.
- (1992). 'How Was Technology Transferred in the Western Provinces?', in M. Wood and F. Queiroga (eds.), *Current Research on the Romanization of the Western Provinces* (Oxford), 101–5.
- (2000). 'Technological Innovation and Economic Progress in the Ancient World: M. I. Finley Re-considered', *EconHR* 53, 29–59.
- Grey, C., and A. Parkin (2003). 'Controlling the Urban Mob: The *Colonatus Perpetuus* of CTh 14.8.1', *Phoenix* 57, 284–99.

- Griffiths, K. E. (1987). 'Problems of Roman Economic History', *Acta RCRF* 25–6, 281–9.
- (1990). 'Pottery and the "Market"', *Acta RCRF* 27–8, 25–8.
- Grodzynski, D. (1987). 'Pauvres et indigents, vils et plébéiens', *Studia et Documenta Historiae et Iuris* 53, 140–218.
- Groom, N. St J. (1981). *Frankincense and Myrrh: A Study of the Arabian Incense Trade* (London).
- Gsell, S. (1932). 'Esclaves ruraux dans l'Afrique romaine', in *Mélanges Gustave Glotz* (Paris), 1.397–415.
- Guarnieri, C. (1982). 'Le anfore del Lapidario Civico di Ferrara', *Musei ferraresi: bollettino annuale* 12, 71–84.
- Guéry, R. (1990). Review of Bémont and Jacob (1986), *JRA* 3, 61–75.
- Gummerus, H. (1916). 'Industrie und Handel', in *RE*, cols 1381–1535.
- Günther, R. (1990). *Klassen, Stände und Schichten in der antiken Gesellschaftsordnung* (Sitzungsberichte der Sächsischen Akademie der Wissenschaften zu Leipzig 130.4) (Berlin).
- Gutman, H. G. (1976). *The Black Family in Slavery and Freedom, 1750–1925* (New York).
- and R. Sutch (1976). 'Victorians All? The Sexual Mores and Conduct of Slaves and their Masters', in P. A. David, H. G. Gutman, R. Sutch, P. Temin, and G. Wright, *Reckoning with Slavery: A Critical Study in the Quantitative History of American Negro Slavery* (New York), 134–62.
- Gutsfeld, A. (1992). 'Zur Wirtschaftsmentalität nichtsenatorischer provinzieller Oberschichten: Aemilia Pudentilla und seine Verwandten', *Klio* 74, 250–68.
- Habicht, C. (1957). 'Eine Urkunde des Akarnanischen Bundes', *Hermes* 85, 86–122.
- Haley, E. W. (1990). 'The Lamp Manufacturer Gaius Iunius Draco', *MBAH* 9, 2, 1–13.
- (2003). *Baetica Felix: People and Prosperity in Southern Spain from Caesar to Septimius Severus* (Austin, TX).
- Halli, S. S., and K. V. Rao (1992). *Advanced Techniques of Population Analysis* (New York).
- Händel, A. (1985). 'Zur Interpretation von Inschriften mit Berufsbezeichnungen von Handwerkern und Händlern im Rom der Prinzipatszeit', *Klio* 62, 498–501.
- Hands, A. R. (1968). *Charities and Social Aid in Greece and Rome* (London).
- Harden, D. B. (1970). 'Ancient Glass, II: Roman', *Archaeological Journal* 126, 44–77.
- Harl, K. W. (1996). *Coinage in the Roman Economy, 300 B.C. to A.D. 700* (Baltimore).
- Harrauer, H., and P. J. Sijpesteijn (1985). 'Ein neues Dokument zu Roms Indienhandel. P.Vindob. G40822', *Anzeiger der Oesterreichischen Akademie der Wissenschaften in Wien* 122, 124–55.
- Harris, W. V. (1979). *War and Imperialism in Republican Rome, 327–70 B.C.* (Oxford; corrected edn 1985).
- (1980a). 'Towards a Study of the Roman Slave Trade', in D'Arms and Kopff (1980: 117–40).
- (1980b). 'Roman Terracotta Lamps: the Organization of an Industry', *JRS* 70, 126–45.
- (1982). 'The Theoretical Possibility of Extensive Infanticide in the Graeco-Roman World', *CQ* 32, 114–16.
- (1985). *War and Imperialism in Republican Rome, 327–70 B.C.* (Oxford).

- Harris, W.V. (1988). 'On the Applicability of the Concept of Class in Roman History', in T. Yuge and M. Doi (eds.), *Forms of Control and Subordination in Antiquity* (Tokyo), 598–610.
- (1989a). *Ancient Literacy* (Cambridge, MA).
- (1989b). 'Trade and the River Po: A Problem in the Economic History of the Roman Empire', in Bergier (1989: 123–34).
- (1990). 'Roman Warfare in the Economic and Social Context of the Fourth Century B.C.', in W. Eder (ed.), *Staat und Staatlichkeit in der fruehen romischen Republik* (Stuttgart), 494–510.
- (1991). 'A Milestone from the Via Traiana Nova near Orvieto', *ZPE* 85, 186–8.
- (1993a). Review of J. Riddle, *Contraception and Abortion from Antiquity to the Renaissance*, and T. G. Parkin, *Demography and Roman Society*, *New York Review of Books* (18 November), 52–4.
- (1993b). 'Between Archaic and Modern: Some Current Problems in the History of the Roman Economy', in Harris (1993d: 11–29).
- (1993c). 'Production, Distribution, and *Instrumentum Domesticum*', in Harris (1993d: 186–9).
- (ed.) (1993d). *The Inscribed Economy: Production and Distribution in the Roman Empire in the Light of Instrumentum Domesticum* (JRA Supplement 6) (Ann Arbor).
- (1994). 'Child-Exposure in the Roman Empire', *JRS* 84, 1–22.
- (1995a). Review of *LTUR* 1, *JRA* 8, 365–75.
- (1995b). '*Instrumentum Domesticum* and Literacy', in H. Solin, O. Salomies, and U.-M. Liertz (eds.), *Acta Colloquii Epigraphici Latini* (Helsinki), 19–27.
- (1999). 'Geography, Demography and the Sources of Roman Slaves', *JRS* 89, 62–75.
- (2000). 'A Julio-Claudian Business Family?', *ZPE* 130, 263–4.
- (2002). *Restraining Rage: The Ideology of Anger Control in Classical Antiquity* (Cambridge, MA).
- (2003). 'Roman Governments and Commerce, 300 B.C.–A.D. 300', in C. Zaccagnini (ed.), *Mercanti e politica nel mondo antico* (Bari and Rome), 275–309.
- (ed.) (2005a). *Rethinking the Mediterranean* (Oxford).
- (2005b). 'The Mediterranean and Ancient History', in Harris (2005a: 1–42).
- (2006). 'A Revisionist View of Roman Money', *JRS* 96, 1–24.
- (2007). 'The Late Republic', in Scheidel et al. (2007: 511–39).
- (2008a). 'The Nature of Roman Money', in Harris (2008b: 174–207).
- (ed.) (2008b). *The Monetary Systems of the Greeks and Romans* (Oxford).
- (forthcoming, 2011). 'Bois et déboisement dans la Méditerranée antique', *Annales, Histoire, sciences sociales* 66.
- and K. Iara (eds.) (forthcoming, 2011). *Maritime Technology in the Ancient Economy: Ship-Design and Navigation* (JRA Supplement 82).
- Hassall, M. (1978). 'Britain and the Rhine Provinces: Epigraphic Evidence for Roman Trade', in J. du Plat Taylor and H. Cleere (eds.), *Roman Shipping and Trade: Britain and the Rhine Provinces* (London), 41–8.
- Hatzfeld, J. (1919). *Les trafiquants italiens dans l'Orient hellénique* (Paris).
- Hawke, G. R. (1980). *Economics for Historians* (Cambridge).
- Healey, J. F. (2009). *Aramaic Inscriptions and Documents of the Roman Period* (Oxford).
- Healy, J. F. (1978). *Mining and Metallurgy in the Greek and Roman World* (London).

- Healy, J. F. (1989). 'Greek and Roman Gold Sources: The Literary and Scientific Evidence', in *Minería y metalurgia en las antiguas civilizaciones mediterráneas y europeas* (Madrid), 2.9–20.
- Heather, P. (1996). *The Goths* (Oxford).
- Heers, J. (1961). *Gènes au XVe siècle: activité économique et problèmes sociaux* (Paris).
- Helen, T. (1975). *Organization of Roman Brick Production in the First and Second Centuries A.D.* (Helsinki).
- Herrmann, P. (1996). 'Neues vom Sklavenmarkt in Sardeis', *Arkeoloji Dergisi* 4, 175–87.
- Herrmann-Otto, E. (1993). *Ex Ancilla Natus: Untersuchungen zu den 'hausgeborenen' Sklaven und Sklavinnen im Westen des Römischen Kaiserreiches* (Stuttgart).
- Herz, P. (1988). *Studien zur römischen Wirtschaftsgesetzgebung* (Stuttgart).
- Hicks, J. (1967). *Critical Essays in Monetary Theory* (Oxford).
- (1969). *A Theory of Economic History* (Oxford).
- Higman, B. W. (1973). 'Household Structure and Fertility on Jamaican Slave Plantations: A Nineteenth-Century Example', *Population Studies* 27, 527–50.
- (1984). *Slave Populations of the British Caribbean 1807–1834* (Baltimore).
- Hitchner, R. B. (2005). '"The Advantages of Wealth and Luxury": The Case for Economic Growth in the Roman Empire', in Manning and Morris (2005: 207–22).
- Höbenreich, E. (1997). *Annona: Juristische Aspekte der stadtrömischen Lebensmittelversorgung im Prinzipat* (Graz).
- Hodge, A. T. (1990). 'A Roman Factory', *Scientific American* (November), 106–11.
- Hodges, R., and D. Whitehouse (1983). *Mohammed, Charlemagne and the Origins of Europe* (London).
- Hoffman, P. T., D. S. Jacks, P. A. Levin, and P. H. Lindert (2005). 'Sketching the Rise of Real Inequality in Early Modern Europe', in Allen et al. (2005a: 131–72).
- Hohlfelder, R. L. (ed.) (2008). *The Maritime World of Ancient Rome (Memoirs of the American Academy in Rome supplementary vol. 6)* (Ann Arbor).
- Hollander, D. B. (2007). *Money in the Late Roman Republic* (Columbia Studies in the Classical Tradition 29) (Leiden).
- (2008). 'The Demand for Money in the Late Roman Republic', in Harris (2008b: 112–36).
- Hong, S., J.-P. Candelone, C. C. Patterson, and C. F. Boutron (1996). 'History of Ancient Copper Smelting Pollution during Roman and Medieval Times Recorded in Greenland Ice', *Science* 272, 246–9.
- Hopkins, K. (1966–67). 'On the Probable Age Structure of the Roman Population', *Population Studies* 20, 245–64.
- (1978a). *Conquerors and Slaves* (Cambridge).
- (1978b). 'Economic Growth and Towns and Trade in Classical Antiquity', in P. Abrams and E. A. Wrigley (eds.), *Towns in Societies: Essays in Economic History and Historical Sociology* (Cambridge), 35–77.
- (1980). 'Taxes and Trade in the Roman Empire', *JRS* 70, 101–25.
- (1982). 'The Transport of Staples in the Roman Empire', in *Trade in Staples in Antiquity (Greece and Rome): Eighth International Economic History Congress, Budapest 1982, B12* (Budapest), 81–7.
- (1983a). 'Introduction', in Garnsey et al. (1983: ix–xxv).
- (1983b). 'Models, Ships and Staples', in Garnsey and Whittaker (1983: 84–109).

- Hopkins, K. (2002). 'Rome, Taxes, Rent, and Trade', in W. Scheidel and S. von Reden (eds.), *The Ancient Economy* (Edinburgh), 190–230; originally published in *Kodai* 6/7 (1995–96), 41–75.
- Horden, P., and N. Purcell (2000). *The Corrupting Sea* (Oxford).
- Horsfall, N. (2001). 'The Moretum Decomposed', *Classica et Mediaevalia* 52, 303–15.
- Houston, G. W. (1988). 'Ports in Perspective: Some Comparative Materials on Roman Merchant Ships and Ports', *AJA* 92, 553–64.
- Howell, C. (1976). 'Peasant Inheritance Customs in the Midlands, 1280–1700', in Goody et al. (1976: 112–55).
- Howell, M. C. (2010). *Commerce before Capitalism in Europe, 1300–1600* (Cambridge).
- Howell, P. (1980). *A Commentary on Book One of the Epigrams of Martial* (London).
- Howgego, C. (1990). 'Why Did Ancient States Strike Coins?', *NC* 150, 1–25.
- (1992). 'The Supply and Use of Money in the Roman World 200 B.C. to A.D. 300', *JRS* 82, 1–31.
- (1994). 'Coin Circulation and the Integration of the Roman Economy', *JRA* 7, 5–21.
- (1995). *Ancient History from Coins* (London).
- (1996a). Review of Duncan-Jones (1994), *JRS* 86, 208–9.
- (1996b). 'The Circulation of Silver Coins, Models of the Roman Economy, and Crisis in the Third Century A.D.: Some Numismatic Evidence', in King and Wigg (1996: 219–36).
- Humphreys, S. C. (1978). *Anthropology and the Greeks* (London).
- Ilberg, J. (1930). *Rufus von Ephesos* (Abh. Sächs. Ak. Wiss. 41.1) (Leipzig).
- Inikori, J. E., and S. L. Engerman (eds.) (1992). *The Atlantic Slave Trade: Effects on Economies, Societies, and Peoples in Africa, the Americas, and Europe* (Cambridge).
- Ioannatou, M. (2004). 'Le code de l'honneur des paiements: créanciers et débiteurs à la fin de la République romaine', in Andreau et al. (2004: 87–107).
- Isaac, B. (1990). *The Limits of Empire: The Roman Army in the East* (Oxford).
- Jacques, F. (1991). 'L'huile de Bétique dans le nord de la France d'après les marques d'amphores Dressel 20', *Revue du Nord: Archéologie* 63, 195–223.
- John, A. M. (1988). *The Plantation Slaves of Trinidad, 1783–1816: A Mathematical and Demographic Enquiry* (Cambridge).
- Johnson, A. C. (1936). *Roman Egypt* (Economic Survey of Ancient Rome 2) (Baltimore).
- Johnston, D. (1999). *Roman Law in Context* (Cambridge).
- Jones, A. H. M. (1940). *The Greek City from Alexander to Justinian* (Oxford).
- (1948). *Ancient Economic History* (London).
- (1954). 'The Cities of the Roman Empire', *Recueils de la Société Jean Bodin* 6, 135–73; repr. in Jones (1974: 1–34).
- (1955). 'The Economic Life of Towns in the Roman Empire', *Recueils de la Société Jean Bodin* 7, 161–92; repr. in Jones (1974: 35–60).
- (1959). 'Over-Taxation and the Decline of the Roman Empire', *Antiquity* 33, 39–43; repr. in Jones (1974: 82–9).
- (1960). 'The Cloth Industry under the Roman Empire', *EconHR* 13, 183–92; repr. in Jones (1974: 350–64).
- (1964). *The Later Roman Empire, 284–602* (Oxford, 3 vols).
- (1974). *The Roman Economy* (Oxford).
- Jongman, W. (1988). *The Economy and Society of Pompeii* (Amsterdam).

- Jongman, W. (2003). 'A Golden Age: Death, Money Supply and Social Succession in the Roman Empire', in Lo Cascio (2003: 181–96).
- (2006). 'The Rise and Fall of the Roman Economy: Population, Rents and Entitlement', in P. F. Bang, M. Ikeguchi, and H. G. Ziche (eds.), *Ancient Economies, Modern Methodologies: Archaeology, Comparative History, Models and Institutions* (Bari), 237–54.
- (2007). 'The Early Roman Empire: Consumption', in Scheidel et al. (2007: 592–618).
- Jouffroy, H. (1986). *La construction publique en Italie et dans l'Afrique romaine* (Strasbourg).
- Kaser, M. (1971, 1975). *Das römische Privatrecht*, 2nd edn (Munich, 2 vols).
- Kehoe, D. P. (1988). *The Economics of Agriculture on Roman Imperial Estates in North Africa* (Göttingen).
- (1997). *Investment, Profit, and Tenancy: The Jurists and the Roman Agrarian Economy* (Ann Arbor).
- (2007). *Law and the Rural Economy in the Roman Empire* (Ann Arbor).
- Keil, J. (1959). 'Erlass des Prokonsuls L. Antonius Albus über die Freihaltung des ephesischen Hafens', *JÖAI* 44, 142–7.
- Kelly, J. M. (1966). *Roman Litigation* (Oxford).
- Keppie, L. (1983). *Colonisation and Veteran Settlement in Italy (47–14 B.C.)* (London).
- Kessler, D., and P. Temin (2008). 'Money and Prices in the Early Roman Empire', in Harris (2008b: 137–59).
- Keynes, J. M. (1936). *The General Theory of Employment, Interest and Money* (London).
- King, C. E., and D. G. Wigg (eds.) (1996). *Coin Finds and Coin Use in the Roman World* (Berlin).
- Kiple, K. F., and B. T. Higgins (1992). 'Mortality Caused by Dehydration during the Middle Passage', in Inikori and Engerman (1992: 321–37).
- Klein, H. S. (1978). *The Middle Passage* (Princeton).
- (1999). *The Atlantic Slave Trade* (Cambridge).
- and S. L. Engerman (1978). 'Fertility Differentials between Slaves in the United States and the British West Indies: A Note on Lactation Practices and their Possible Implications', *William and Mary Quarterly* 35, 357–74.
- and E. P. Willis (1985). 'The Distribution of Wealth in Late Eighteenth-Century New York City', *Histoire sociale—Social History* 18, 259–83.
- Klingmüller, F. (1916). 'Institor', *RE*, cols 1564–5.
- Klinkenberg, J. (1902). 'Die römischen Grabdenkmäler Kölns', *Bonner Jahrbücher* 108, 80–184.
- Kloft, H. (1988). 'Gedanken zum Ptochós', in Weiler (1988: 81–106).
- Kneissl, P. (1983). 'Mercator-negotiator: Römische Geschäftsleute und die Terminologie ihrer Berufe', *MBAH* 2.1, 73–90.
- (1988). 'Zur Wirtschaftsstruktur des römischen Reiches: Das Beispiel Gallien', in *Alte Geschichte und Wissenschaftsgeschichte: Festschrift für Karl Christ* (Darmstadt), 234–55.
- Koepeke, N., and J. Baten (2005). 'The Biological Standard of Living in Europe during the Last Two Millennia', *European Review of Economic History* 9, 61–95.

- Kolb, A., and J. Ott (1988). 'Ein "collegium negotiatorum Cisalpinorum et Transalpinorum" in Augusta Rauricorum?', *ZPE* 73, 107–10.
- Kolb, F. (1984). *Die Stadt im Altertum* (Munich).
- Kolchin, P. (1993). *American Slavery, 1619–1877* (New York).
- Kolendo, J. (1980). *L'agricoltura nell'Italia romana: tecniche agrarie e progresso economico dalla tarda repubblica al principato*, trans. C. Zawadzka (Rome).
- Krause, J.-U. (1994–95). *Witwen und Waisen im römischen Reich* (Stuttgart, 4 vols).
- Kreissig, H. (1977). 'Tempelland, Katoiken, Hierodulen im Seleukidenreich', *Klio* 59, 375–80.
- Kron, J. G. (2005). 'Anthropometry, Physical Anthropology, and the Reconstruction of Ancient Health, Nutrition, and Living Standards', *Historia* 54, 68–83.
- (2008). 'The Much Maligned Peasant: Comparative Perspectives on the Productivity of the Small Farmer in Classical Antiquity', in L. De Ligt and S. J. Northwood (eds.), *People, Land, and Politics: Demographic Developments and the Transformations of Roman Italy 300 BC–AD 14* (Leiden), 71–119.
- Kubitschek, W. (1916). 'Itinerarien', in *RE*, cols 2308–63.
- Kunow, J. (1980). *Negotiator et vectura: Händler und Transport im freien Germanien* (Marburg).
- (1983). *Der römische Import in der Germania libera bis zu den Markomannenkriegen: Studien zu Bronze- und Glasgefäßen* (Neumünster, 1983).
- (1985). 'Die capuanischen Bronzegefäßshersteller Lucius Ansus Epaphroditus und Publius Cypius Polybius', *Bonner Jahrbücher* 185, 215–42.
- (1986). 'Bemerkungen zum Export römischer Waffen in P.A. Cartledge and F.D. Harvey (eds.), *das Barbarikum*', in *Studien zu den Militärgrenzen Roms III* (= 13. Internationaler Limeskongress. Aalen, 1983. Vorträge) (Stuttgart), 740–46.
- Lafon, X. (1993). 'L'huile en Italie centrale à l'époque républicaine: une production sous-estimée?', in M.-C. Amouretti and J.-P. Brun (eds.), *La production du vin et de l'huile en Méditerranée* (BCH Suppl. 26) (Athens), 263–79.
- Lal, D., and H. Myint (1996). *The Political Economy of Poverty, Equity and Growth* (Oxford).
- Lamur, H. (1981). 'Demographic Performance of Two Slave Populations of the Dutch Speaking Caribbean', *Boletín de Estudios Latino Americanos y del Caribe* 30; repr. in Beckles and Shepherd (1991: 209–20).
- Landels, J. G. (1978). *Engineering in the Ancient World* (Berkeley).
- Lane Fox, R. (1985). 'Aspects of Inheritance in the Greek World', in P.A. Cartledge and F.D. Harvey (eds.), *Crux: Essays in Greek History Presented to G. E. M. de Ste. Croix on his 75th Birthday* (London), 208–32.
- Langhammer, W. (1973). *Die rechtliche und soziale Stellung der Magistratus municipales und der Decuriones* (Wiesbaden).
- Laubenheimer, F. (1993). 'Au dossier du vin italien en Gaule (II^e–I^{er} siècles av.J.-C.)', in A. Daubigny (ed.), *Fonctionnement social de l'âge de fer* (Lons-le-Saunier), 57–64.
- Lauffer, S. (ed.) (1971). *Diokletians Preisedikt* (Berlin).
- (1988). 'Die Terminologie zur antiken Sozialgeschichte', in H. Kloft (ed.), *Sozialmassnahmen und Fürsorge: Zur Eigenart antiker Sozialpolitik* (Graz), 7–14.
- Laum, B. (1918). 'Skavenversteigerung auf einem römischen Relief aus Arlon', *Germania* 2, 108–12.

- Laurence, R. (1998). 'Land Transport in Roman Italy: Costs, Practice and the Economy', in Parkins and Smith (1998: 129–48).
- (1999). *The Roads of Roman Italy: Mobility and Cultural Change* (London).
- Laven, P. (1989). 'The Venetian Rivers in the Sixteenth Century', in Bergier (1989: 198–217).
- Le Gall, J. (1983). 'La diffusion de l'huile espagnole dans la Gaule du Nord', in *Producción y comercio del aceite*, 213–23.
- Leibenstein, H. (1976). *Beyond Economic Man: A New Foundation for Microeconomics* (Cambridge, MA).
- London, J. E. (1990). 'The Face on the Coins and Inflation in Roman Egypt', *Klio* 72, 106–34.
- Le Roux, P. (1988). 'L'huile de Bétique et le prince sur un itinéraire annonaire', in *Hommage à Robert Etienne* (Paris), 247–71.
- Le Roy Ladurie, E. (1976). 'Family Structures and Inheritance Customs in Sixteenth-Century France', in Goody et al. (1976: 37–70); previously published in *Annales ESC* 27 (1972), 825–46.
- Levick, B. M. (1967). *Roman Colonies in Southern Asia Minor* (Oxford).
- Lewis, N. (1974). *Papyrus in Classical Antiquity* (Oxford).
- (2000). 'Judiciary Routines in Roman Egypt', *BASP* 37, 83–93.
- Liebeschuetz, J. H. W. G. (1972). *Antioch: City and Imperial Administration in the Later Roman Empire* (Oxford).
- Linderski, J. (1984). 'Si vis pacem, para bellum: Concepts of Defensive Imperialism', in W. V. Harris (ed.), *The Imperialism of Mid-Republican Rome* (Rome), 137–64; repr. in *Roman Questions* (Stuttgart, 1993), 1–31.
- Link, S. (1993). 'Anachoresis: Steuerflucht im Ägypten der frühen Kaiserzeit', *Klio* 75, 306–21.
- Liou, B. (1980). 'Les amphores à huile de l'épave Saint-Gervais 3 à Fos-sur-mer: premières observations sur les inscriptions peintes', in *Producción y comercio del aceite*, 161–75.
- and C. Domergue (1990). 'Le commerce de la Bétique au premier siècle de notre ère: l'épave Sud-Lavezzi 2 (Bonifacio, Corse du Sud)', *Archaeonautica* 10, 11–123.
- Little, L. K. (ed.) (2007). *Plague and the End of Antiquity: The Pandemic of 541–750* (Cambridge).
- Littlejohn, J. (1972). *Social Stratification* (London).
- Liu, J. (2009). *The Collegia Centonariorum: The Guilds of Textile Dealers in the Roman West* (Columbia Studies in the Classical Tradition 34) (Leiden).
- Loane, H. J. (1938). *Industry and Commerce of the City of Rome (50 B.C.–200 A.D.)* (Baltimore).
- Lo Cascio, E. (1979). 'Carbone, Druso e Gratidiano: la gestione della "res nummaria" a Roma tra la "Lex Papiria" e la "Lex Cornelia"', *Athenaeum* 57, 215–38.
- (1981). 'State and Coinage in the Late Republic and Early Empire', *JRS* 71, 76–86.
- (1982). '"Obaerarii" ("obaerati"): la nozione della dipendenza in Varrone', *Index* 11, 265–84.
- (1988). 'Weber e il "capitalismo antico"', in M. Losito and P. Schiera (eds.), *Max Weber e le scienze sociali del suo tempo* (Bologna), 410–21; repr. in Lo Cascio, *Crescita e declino: studi di storia dell'economia romana* (Rome, 2009), 299–315.

- Lo Cascio, E. (1993). 'Dinamiche economiche e politiche fiscali fra i Severi e Aureliano', in Schiavone (1988–93: 3.1, 247–82).
- (1994). 'The Size of the Roman Population: Beloch and the Meaning of the Augustan Census Figures', *JRS* 84, 23–40.
- (1996). 'How Did the Romans View their Coinage and its Function?', in King and Wigg (1996: 273–87).
- (1999). 'Canon frumentarius, suarius, vinarius: stato e privati nell'approvvigionamento dell'Urbs', in W. V. Harris (ed.), *The Transformations of Urbs Roma in Late Antiquity* (JRA Supplement 33) (Portsmouth, RI), 163–82.
- (ed.) (2000). *Mercati permanenti e mercati periodici nel mondo romano* (Bari).
- (2001). 'Recruitment and the Size of the Roman Population from the Third to the First Century BCE', in W. Scheidel (ed.), *Debating Roman Demography* (Leiden), 111–37.
- (2002). 'Considerazioni sul numero e sulle fonti di approvvigionamento degli schiavi in età imperiale', in W. Suder (ed.), *Études de démographie du monde gréco-romain* (Wrocław), 51–65.
- (ed.) (2003). *Credito e moneta nel mondo romano* (Bari).
- (ed.) (2006). *Innovazione tecnica e progresso economico nel mondo romano* (Bari).
- (2008). 'La dimensione finanziaria e monetaria della crisi del III secolo d.C.', *Studi storici* 49, 876–94.
- and A. Storch Marino (eds.) (2001). *Modalità insediative e strutture agrarie nell'Italia meridionale in età romana* (Bari).
- Lockyear, K. (1999). 'Hoard Structure and Coin Production in Antiquity: An Empirical Investigation', *NC* 159, 215–43.
- Loeschcke, S. (1919). *Lampen aus Vindonissa: Ein Beitrag zur Geschichte von Vindonissa und des antiken Beleuchtungswesens* (Zurich).
- Lombardini, E. (1870). *Studi idrologici e storici sopra il grande estuario adriatico, i fiumi che vi confluiscono, ecc.* (Mem. R. Ist. Lomb., Classe di scienze matematiche e naturali xi (= ser. 3.1), no. 5) (Milan).
- Lopez, R. S. (1987). 'The Trade of Medieval Europe: The South', in *Cambridge Economic History of Europe* 2, 2nd edn, 306–401.
- Love, J. R. (1991). *Antiquity and Capitalism* (London).
- Lucchelli, T. M. (1998). *La moneta nei rapporti tra Roma e l'Europa barbarica: aspetti e problemi* (Florence).
- MacMullen, R. (1960). 'Inscriptions on Armour and the Supply of Arms in the Roman Empire', *AJA* 64, 23–40.
- (1970). 'Market Days in the Roman Empire', *Phoenix* 24, 333–41.
- (1974). *Roman Social Relations, 50 B.C. to A.D. 284* (New Haven).
- (1987). 'Late Roman Slavery', *Historia* 36, 359–82.
- Macve, R. H. (1985). 'Some Glosses on "Greek and Roman Accounting"', in P.A. Cartledge and F.D. Harvey (eds.), *Crux: Essays in Greek History Presented to G. E. M. de Ste. Croix* (London), 233–61.
- Maestripietri, D., and M. Ceci (1990). 'Gli Oppi: una famiglia di fabbricanti urbani di lucerne', *JRA* 3, 119–32.
- Maggetti, M., and T. Küpfer (1978). 'Composition of the terra sigillata from La Péniche (Vidy/Lausanne, Switzerland)', *Archaeometry* 20, 183–8.

- Maischberger, M. (1999). 'Testaceus mons', *LTUR* 5, 28–30.
- Malanima, P. (2008). 'Wachstum und Reife: die Arbeitsproduktivität in den traditionellen Agrargesellschaften', in M. Cerman, I. Steffelbauer, and S. Tost (eds.), *Agrarrevolutionen: Verhältnisse in der Landwirtschaft vom Neolithikum zur Globalisierung* (Innsbruck), 21–40.
- Malfitana, D. (2006). 'Appropriazione di "copyright", falsificazione o ingannevole messaggio pubblicitario nel marchio "ARRETINUM"?', *MBAH* 25.2, 149–68.
- Malthus, T. (1826). *An Essay on the Principle of Population*, 6th edn (London).
- Manacorda, D. (1977). 'Anfore spagnole a Pompei', in *L'instrumentum domesticum di Ercolano e Pompei nella prima età imperiale* (= *Quaderni di cultura materiale* 1) (Rome), 121–31.
- (1989). 'Leanfore dell'Italia repubblicana: aspetti economici e sociali', in *Amphores romaines*, 443–67.
- (1994). 'Gli aselli dossuarii di Varrone', *Acta Romana Instituti Danici* 22, 79–90.
- (2001). 'Sulla Calabria romana nel passaggio tra la repubblica e l'impero', in Lo Cascio and Storch Marino (2001: 391–410).
- and C. Panella (1993). 'Anfore', in Harris (1993d: 55–64).
- Maneschi, A. (1998). *Comparative Advantage in International Trade: A Historical Perspective* (Cheltenham).
- Mangas Manjarrez, J. (1971). *Esclavos y libertos en la España romana* (Salamanca).
- Mangin, M. (1988). 'Les mines et la métallurgie du fer en Gaule romaine: travaux et recherches', *Latomus* 47, 74–89.
- Mankiw, N. G. (2003). *Macroeconomics*, 5th edn (New York).
- Manning, J. G., and I. Morris (eds.) (2005). *The Ancient Economy: Evidence and Models* (Stanford).
- Mannoni, T. (1983). 'Vie e mezzi di comunicazione', *Archeologia medievale* 10, 213–22.
- Mansuelli, G. A. (1962). *I Cisalpini (III sec. a.c.–III sec. d.c.)* (Bologna).
- (1973). 'Il commercio delle pietre veronesi nella regione VIII e la viabilità emiliano-veneta nell'età romana', in *Il territorio veronese*, 77–85.
- Marcone, A. (2006). 'Le innovazioni nell'agricoltura romana', in Lo Cascio (2006: 181–95).
- (2009). 'Il lavoro giornaliero nell'agricoltura a Roma in età repubblicana', in J. Carlsen and E. Lo Cascio (eds.), *Agricoltura e scambi nell'Italia tardo-repubblicana* (Bari), 115–28.
- Marek, C. (ed.) (2006). *Die Inschriften von Kaunos* (Munich).
- Margaritis, E., and M. K. Jones (2008). 'Greek and Roman Agriculture', in Oleson (2008: 158–74).
- Marichal, R. (1988). *Les graffites de la Graufesenque* (Gallia Suppl. 47) (Paris).
- Marinovich, L. P., E. S. Golubcova, I. S. Sifman, and A. I. Pavlovskaja (1992). *Die Sklaverei in den östlichen Provinzen des römischen Reiches im 1.–3. Jahrhundert* (trans. J. Kriz) (Stuttgart); originally published as *Rabstvo v vostochnykh provintsiakh Rimskoi imperii v 1.–3. vv.* (Moscow, 1977).
- Marlière, E. (2002). *L'outre et le tonneau dans l'Occident romain* (Montagnac).
- Martin, R. (1974). '"Familia Rustica": les esclaves chez les agronomes latins', *Actes du colloque 1972 sur l'esclavage*, 267–97.
- Martin-Kilcher, S., S. Schupach, W. B. Stern, and J. Ballié (1985). 'Keramikanalysen an römischen Ölamphoren aus Augst, Kaiseraugst, Avenches und Lausanne-Vidy.

- Naturwissenschaftliche und archäologische Aspekte', *Jahrbuch der Schweizerischen Gesellschaft für Ur- und Frühgeschichte* 68, 173–204.
- Marx, K. (1967). *Capital: A Critique of Political Economy*, 1 (New York) [1867/1890].
- (1968). *The Eighteenth Brumaire of Louis Bonaparte* (New York) [1852].
- Marzano, A. (2007). *Roman Villas in Central Italy: A Social and Economic History* (Columbia Studies in the Classical Tradition 30) (Leiden).
- Matijašić, R. (1983). 'Cronografia dei bolli laterizi della figlina Pansiana nelle regioni adriatiche', *MEFRA* 95, 961–95.
- Matthews, J. F. (1984). 'The Tax Law of Palmyra: Evidence for Economic History in a City of the Roman East', *JRS* 74, 157–80.
- Mattingly, D. J. (1988a). 'The Olive Boom: Oil Surpluses, Wealth and Power in Roman Tripolitania', *Libyan Studies* 19, 21–41.
- (1988b). 'Oil for Export? A Comparison of Libyan, Spanish and Tunisian Olive Oil Production in the Roman Empire', *JRA* 1, 33–56.
- (1990). 'Paintings, Presses and Perfume Production at Pompeii', *Oxford Journal of Archaeology* 9, 71–90.
- (1994a). *Tripolitania* (Ann Arbor).
- (1994b). 'Regional Variation in Roman Oleoculture', in Carlsen et al. (1994: 91–106).
- (1996). 'First Fruit? The Olive in the Roman World', in J. B. Salmon and G. Shipley (eds.), *Human Landscapes in Classical Antiquity: Environment and Culture* (London), 213–53.
- and J. Salmon (eds.) (2001). *Economies beyond Agriculture in the Classical World* (London).
- Mauersberger, A. (1956–1975). *Polybios-Lexicon* (Berlin).
- Maxey, M. (1938). *Occupations of the Lower Classes in Roman Society* (Chicago).
- Mayet, F. (1984). *Les céramiques sigillées hispaniques: contribution à l'histoire économique de la péninsule ibérique sous l'empire romain* (Paris, 2 vols).
- McCormick, M. (2001). *Origins of the European Economy: Communications and Commerce, AD 300–900* (Cambridge).
- McKechnie, P. (1999). 'An Errant Husband and a Rare Idiom (P.Oxy. 744)', *ZPE* 127, 157–61.
- Mee, C., D. Gill, H. Forbes, and L. Foxhall (1991). 'Rural Settlement Change in the Methana Peninsula, Greece', in Barker and Lloyd (1991: 223–32).
- Meiggs, R. (1973). *Roman Ostia*, 2nd edn (Oxford).
- (1980). 'Sea-Borne Timber Supplies to Rome', in D'Arms and Kopff (1980: 185–96).
- (1982). *Trees and Timber in the Ancient World* (Oxford).
- Meikle, S. (1995). 'Modernism, Economics and the Ancient Economy', *Proceedings of the Cambridge Philological Society* 41, 174–91.
- Meillassoux, C. (1991). *The Anthropology of Slavery: The Womb of Iron and Gold* (trans. A. Dasnois) (London); originally published as *Anthropologie de l'esclavage: le ventre de fer et d'argent*, Paris, 1986).
- Mendelsohn, I. (1949). *Slavery in the Ancient Near East* (New York).
- Merola, G. D. (2001). *Autonomia locale, governo imperiale: fiscalità e amministrazione nelle province asiatiche* (Bari).

- Metcalfe, W. E. (1995). Review of Duncan-Jones (1994), *Schweizerische Numismatische Rundschau* 74, 145–59.
- Meyer, F. G. (1988). 'Food Plants Identified from Carbonized Remains at Pompeii and Other Vesuvian Sites', in *Studia Pompeiana et Classica in Honor of Wilhelmina F. Jashemski* (New Rochelle, NY), 1.183–229.
- Middleton, P. (1980). 'La Graufesenque: A Question of Marketing', *Athenaeum* 58, 186–91.
- Migeotte, L. (1984). *L'emprunt public dans les cités grecques* (Paris).
- Milanovic, B. (2006). 'An Estimate of Average Income and Inequality in Byzantium around Year 1000', *Review of Income and Wealth* 52, 449–70.
- Millar, F. (1977). *The Emperor in the Roman World (31 BC–AD 337)* (London).
- (1981). 'The World of the Golden Age', *JRS* 71, 63–75.
- (1993). *The Roman Near East, 31 BC–AD 337* (Cambridge).
- Miller, J. I. (1969). *The Spice Trade of the Roman Empire, 29 B.C. to A.D. 641* (Oxford).
- Millett, P. (2001). 'Productive to Some Purpose? The Problem of Ancient Economic Growth', in Mattingly and Salmon (2001: 17–48).
- Minaud, G. (2005). *La comptabilité à Rome: essai d'histoire économique sur la pensée comptable commerciale et privée dans le monde antique romain* (Lausanne).
- Minería y metalurgia en las antiguas civilizaciones mediterráneas y europeas (Madrid, 1989).
- Miret, M., J. Sanmartí, and J. Santacana (1991). 'From Indigenous Structures to the Roman World: Models for the Occupation of Central Coastal Catalunya', in Barker and Lloyd (1991: 47–53).
- Mirti, P., V. Zelano, R. Aruga, E. Ferrara, and L. Appolonia (1990). 'Roman Pottery from Augusta Praetoria (Aosta, Italy): A Provenance Study', *Archaeometry* 32, 163–75.
- Mises, L. von (1953). *The Theory of Money and Credit* (New Haven).
- Mishkin, F. S. (1986). *The Economics of Money, Banking, and Financial Markets* (Boston).
- Mitchell, S. (1993). *Anatolia: Land, Men, and Gods in Asia Minor* (Oxford, 2 vols).
- Mócsy, A. (1970). *Gesellschaft und Romanisation in der römischen Provinz Moesia Superior* (Amsterdam).
- (1974). *Pannonia and Upper Moesia* (London).
- Moeller, W. O. (1976). *The Wool Trade of Ancient Pompeii* (Leiden).
- Mokyr, J. (1990). *The Lever of Riches: Technological Creativity and Economic Progress* (Oxford).
- Momigliano, A. (1975). Review of M. I. Finley, *Democracy Ancient and Modern* (1973), etc., *New York Review of Books* (16 October), 36–8; repr. in *Sesto contributo alla storia degli studi classici e del mondo antico* (Rome, 1980), 313–22.
- and A. Schiavone (eds.) (1988–93). *Storia di Roma* (Turin, 7 vols).
- Montevecchi, O. (1935). 'Ricerche di sociologia nei documenti dell'Egitto greco-romano, I: I testamenti', *Aegyptus* 15, 67–121.
- (1939, 1941, 1943). 'Ricerche di sociologia nei documenti dell'Egitto greco-romano, III: I contratti di compravendita', *Aegyptus* 19, 11–53; 21, 93–151; 23, 11–89, 244–61.

- Montevecchi, O. (1984). 'I paragrafi 41 e 107 dello Gnomon dell'idios logos: implicazioni socio-culturali e demografiche', in *Atti del XVII Congresso internazionale di papirologia* (Naples), 966–75.
- Monvoisin, V., and C. Pastoret (2003). 'Endogenous Money, Banks and the Revival of the Liquidity Preference', in Rochon and Rossi (2003: 18–40).
- Moore, B. J. (1988). *Horizontalists and Verticalists: The Macroeconomics of Credit Money* (Cambridge).
- Morel, J.-P. (1982). 'Marchandises, marchés, échanges dans le monde romain', *Annali di archeologia e storia antica dell'Istituto universitario orientale di Napoli* (AION, *archeologia*) 4, 193–214.
- (1983). 'Les producteurs de biens artisanaux en Italie à la fin de la République', in *Les 'bourgeoisies' municipales*, 21–39.
- (1989). 'The Transformation of Italy, 300–133 B.C. The Evidence of Archaeology', in *CAH* 8, 2nd edn, 477–516.
- (1991). 'Artisanat, importations et romanisation dans le Samnium aux II^e et I^{er} siècles av. J.-C.', in *La romanisation du Samnium aux II^e et I^{er} siècles* (Naples), 187–203.
- Moretti, L. (1958). 'Sulle "stationes municipiorum" del foro romano', *Athenaeum* 36, 106–16.
- Morley, N. (1996). *Metropolis and Hinterland* (Cambridge).
- (2001). 'The Transformation of Italy, 225–28 B.C.', *JRS* 91, 50–62.
- (2004). *Theories, Models and Concepts in Ancient History* (London).
- (2006). 'The Poor in the City of Rome', in Atkins and Osborne (2006: 21–39).
- Mrozek, S. (1985). 'Zum Kreditgeld in der frühen römischen Kaiserzeit', *Historia* 34, 310–23.
- (1994). 'Le problème de l'annona dans les villes italiennes du Haut-Empire romain', in *Le ravitaillement en blé de Rome*, 95–101.
- (2001). *Faenus: Studien zu Zinsproblemen zur Zeit des Prinzipats* (Historia Einzelschriften 139) (Wiesbaden).
- Muldrew, C. (1998). *The Economy of Obligation: The Culture of Credit and Social Relations in Early Modern England* (New York).
- Müller, W. W. (1978). 'Weihrauch', *RE Supplementband* 15, cols 700–777.
- Munro, J. H. (2003). 'The Medieval Origins of the Financial Revolution: Usury, Rentes, and Negotiability', *International History Review* 25, 505–62.
- Nakane, C. (1970). *Japanese Society* (Berkeley).
- Nani, T. G. (1943–44). 'ΘΡΕΙΤΟΙ', *Epigraphica* 5/6, 45–84.
- Neesen, L. (1980). *Untersuchungen zu den direkten Staatsabgaben der römischen Kaiserzeit (27 v. Chr.–284 n. Chr.)* (Bonn).
- Nenna, M.-D. (2007). 'Production et commerce du verre à l'époque impériale: nouvelles découvertes et problématiques', *Facta* 1, 125–47.
- Newby, M., and K. Painter (eds.) (1991). *Roman Glass: Two Centuries of Art and Invention* (London).
- Newell, C. (1988). *Methods and Models in Demography* (London).
- Nicolet, C. (1966, 1974). *L'ordre équestre à l'époque républicaine (312–43 av. J.-C.)* (Paris, 2 vols).
- (1970). 'Introduction', in *Recherches sur les structures sociales* (Paris), 1–18.

- Nicolet, C. (1979). 'Deux remarques sur l'organisation des sociétés des publicains à la fin de la République romaine', in H. Van Effenterre (ed.), *Points de vue sur la fiscalité antique* (Paris), 69–95.
- (ed.) (1984). *Des ordres à Rome* (Paris).
- (1988). *Rendre à César* (Paris, 1988).
- (1993). 'Le Monumentum Ephesenum et la délimitation du portorium', *MEFRA* 105, 929–59.
- (1994). 'Empire and Society, 133–43 B.C.', in *CAH* 9, 2nd edn, 599–643.
- (1999). 'Le "Monumentum Ephesenum", la loi Terentia-Cassia et les dîmes d'Asie', *MEFRA* 111, 191–215.
- Nieto, J. (1986). 'El pecio *Culip IV*: observaciones sobre la organización de los talleres de *terra sigillata* de la Graufesenque', *Archaeonautica* 6, 86–119.
- (1988). 'Cargamento principal y cargamento secundario', *Cahiers d'histoire* 33, 379–95.
- Nissen, H. (1883–1902). *Italische Landeskunde* (Berlin, 2 vols in 3).
- Noé, E. (1974). 'La produzione tessile nella Gallia cisalpina in età romana', *Rendiconti dell'Istituto Lombardo* 108, 918–32.
- Nolla, J. M., and F. J. Nieto (1989). 'La importación de ánforas romanas en Cataluña durante el periodo tardo-republicano', in *Amphores romaines*, 367–91.
- Nollé, J. (1982). *Nundinas instituere et habere: Epigraphische Zeugnisse zur Einrichtung und Gestaltung von ländlichen Märkten in Afrika und in der Provinz Asia* (Hildesheim).
- (1999). 'Marktrechte ausserhalb der Stadt: Lokale Autonomie zwischen Statthalter und Zentralort', in W. Eck (ed.), *Lokale Autonomie und römische Ordnungsmacht in der kaiserzeitlichen Provinzen vom 1. bis 3. Jahrhundert* (Munich), 93–113.
- Nonnis, D. (1999). 'Attività imprenditoriale e classi dirigenti nell'età repubblicana: tre città campione', *Cahiers du Centre Gustave-Glotz* 10, 71–109.
- Nörr, D. (1965). 'Zur sozialen und rechtlichen Bewertung der freien Arbeit in Rom', *ZSS* 82, 67–105.
- North, D. C. (1981). *Structure and Change in Economic History* (New York).
- (1990). *Institutions, Institutional Change and Economic Performance* (Cambridge).
- Oates, J. F. (1969). 'A Rhodian Auction Sale of a Slave Girl', *Journal of Egyptian Archaeology* 55, 191–210.
- Oertel, F. (1934). 'The Economic Unification of the Mediterranean Region: Industry, Trade and Commerce', in *CAH* 10, 1st edn, 382–424.
- Olcese, G. (1993). 'Archeologia e archeometria dei laterizi bollati urbani: primi risultati e prospettive di ricerca', in Harris (1993d: 121–8).
- Oldenstein, J. (1985). 'Manufacture and Supply of the Roman Army with Bronze Fittings', in Bishop (1985b: 82–94).
- Oleson, J. P. (1996). 'Water-Lifting Devices at Herculaneum and Pompeii in the Context of Roman Technology', in N. De Haan and G. C. M. Jansen (eds.), *Cura aquarum in Campania* (BABesch Supplement 4) (Leiden), 67–77.
- (ed.) (2008). *The Oxford Handbook of Engineering and Technology in the Classical World* (Oxford).
- Oliver, J. H. (ed.) (1989). *Greek Constitutions of Early Roman Emperors from Inscriptions and Papyri* (Philadelphia).

- Olwell, R. (1998). *Masters, Slaves and Subjects: The Culture of Power in the South Carolina Low Country 1740–1790* (Ithaca, NY).
- Ørsted, P. (1997). 'Öffentliche Ökonomie, Besteuerung und Produktion im Römischen Reich von ca. 100 v.Chr. bis 250 n.Chr', *MBAH* 16.1, 35–56.
- Osborne, R. (1991). 'Pride and Prejudice, Sense and Subsistence: Exchange and Society in the Greek City', in Rich and Wallace-Hadrill (1991: 119–45).
- (2006). 'Introduction', in Atkins and Osborne (2006: 1–20).
- Oxé, A., H. Comfort, and P. Kenrick (2000). *Corpus Vasorum Arretinorum*, 2nd edn (Bonn).
- Padgug, R. A. (1975). 'Classes and Society in Classical Greece', *Arethusa* 8, 85–117.
- Pagano, M., and J. Rougetet (1987). 'La casa del liberto P. Confuleius Sabbio a Capua e i suoi mosaici', *MEFRA* 99, 753–65.
- Panciera, S. (1957). *Vita economica di Aquileia* (Aquileia).
- (1980). 'Olearii', in D'Arms and Kopff (1980: 235–50); repr. in Panciera (2006: 1. 284–305).
- (1997). 'L'evergetismo civico nelle iscrizioni latine d'epoca repubblicana', in *Actes du Xe Congrès international d'épigraphie grecque et latine (Paris, 1992)* (Paris), 249–90, repr. in Panciera (2006: 1.53–82).
- (2006). *Epigrafi, epigrafia, epigrafisti* (Rome, 3 vols).
- Panella, C. (1981). 'La distribuzione e i mercati', in Giardina and Schiavone (1981: 2.55–80).
- Parássoglou, C. M. (1978). *Imperial Estates in Egypt* (Las Palmas).
- Parker, A. J. (1984). 'Shipwrecks and Ancient Trade in the Mediterranean', *Archaeological Review from Cambridge* 3.2, 99–113.
- (1992). *Ancient Shipwrecks of the Mediterranean and the Roman Provinces* (BAR-IS 580) (Oxford).
- (2008). 'Artifact Distributions and Wreck Locations: The Archaeology of Roman Commerce', in Hohlfelder (2008: 177–96).
- Parkin, A. (2006). '"You Do Him No Service": An Exploration of Pagan Almsgiving', in Atkins and Osborne (2006: 60–82).
- Parkin, T. G. (1992). *Demography and Roman Society* (Baltimore).
- Parkins, H. M., and C. Smith (eds.) (1998). *Trade, Traders and the Ancient City* (London).
- Paterson, J. (1998). 'Trade and Traders in the Roman World: Scale, Structure and Organisation', in Parkins and Smith (1998: 149–67).
- Patlagean, E. (1977). *Pauvreté économique et pauvreté sociale à Byzance, 4e–7e siècles* (Paris).
- Patterson, O. (1982). *Slavery and Social Death: A Comparative Study* (Cambridge, MA).
- Pavis d'Escurac, H. (1976). *La préfecture de l'annone: service administratif impérial d'Auguste à Constantin* (Paris).
- (1981). 'Nundinae et vie rurale dans l'Afrique du Nord romaine', *Bulletin archéologique du Comité des Travaux Historiques* n.s. 17, B, 251–8.
- (1987). 'À propos de l'approvisionnement en blé des cités de l'Orient romain', in E. Frézouls (ed.), *Sociétés urbaines, sociétés rurales dans l'Asie mineure et la Syrie hellénistiques et romaines* (Strasbourg), 117–30.

- Pavolini, C. (1987). 'Le lucerne romane fra il III sec.a.C. e il III sec.d.C.', in P. Lévêque and J.-P. Morel (eds.), *Céramiques hellénistiques et romaines 2* (Paris), 139–65.
- Pavolini, C. (1990). Review of T. Oziol and R. Rebuffat (eds.), *Les lampes de terre cuite en Méditerranée: des origines à Justinien* (Lyon, 1987), *JRA* 3, 442–4.
- Peacock, D. P. S. (1969–70). 'The Scientific Analysis of Ancient Ceramics: A Review', *World Archaeology* 1, 375–89.
- (1977). 'Pompeian Red Ware', in idem (ed.), *Pottery and Early Commerce* (London), 147–62.
- (1982). *Pottery in the Roman World: An Ethnoarchaeological Approach* (London).
- F. Bejaoui, and N. Ben Lazreg (1990). 'Roman Pottery Production in Central Tunisia', *JRA* 3, 59–84.
- and D. F. Williams (1986). *Amphorae and the Roman Economy* (London).
- Pearl, O. M. (1952). 'Transport Charges in Egypt in the Era of Inflation', *TAPhA* 83, 74–9.
- Pekáry, T. (1980). 'Les limites de l'économie monétaire à l'époque romaine', in Les 'dévaluations' à Rome 2 (Rome), 103–20.
- Pellegrini, M. (1969). 'La pianura del Secchia e del Panaro', *Atti della Società dei Naturalisti e Matematici di Modena* 100, 1–51.
- Peña, J. T. (1993). 'Two Studies of the Provenience of Roman Pottery through Neutron Activation Analysis', in Harris (1993d: 107–20).
- Persson, K. G. (1988). *Pre-industrial Economic Growth: Social Organization and Economic Progress in Europe* (Oxford).
- Petrikovits, H. von (1981). 'Die Spezialisierung des römischen Handwerks', in H. Jankuhn (ed.), *Das Handwerk in vor- und frühgeschichtlicher Zeit*, 1 (Göttingen), 63–132.
- (1985). 'Römischer Handel am Rhein und an der oberen und mittleren Donau', in *Untersuchungen zu Handel und Verkehr der vor- und frühgeschichtlichen Zeit in Mittel- und Nordeuropa I* (Abh. Göttingen, 3rd series, no. 143) (Göttingen), 299–336.
- Pflaum, H.-G. (1956). 'Remarques sur l'onomastique de Castellum Celtianum', in E. Swoboda (ed.), *Carnuntina* (Graz), 126–51.
- Picon, M. (1973). 'Recherches de laboratoire sur la céramique antique', *Revue Archéologique*, 119–32.
- E. Meile, M. Vichy, and J. Garmier (1972–73). 'Recherches sur les céramiques d'Ateius trouvées en Gaule', *Acta RCRF* 14–15, 128–35.
- Pisani Sartorio, G. (1996). 'Macellum', in *LTUR* 3, 201–3.
- Le Pitture antiche d'Ercolano e contorni* 3 (Naples, 1762).
- Pleket, H. W. (1971). 'Sociale Stratificatie en Sociale Mobiliteit in de Romeinse Keizertijd', *Tijdschrift voor Geschiedenis* 84, 215–51.
- (1983). 'Urban Elites and Business in the Greek Part of the Roman Empire', in Garnsey et al. (1983): 131–44.
- (1984). 'Urban Elites and the Economy in the Greek Cities of the Roman Empire', *MBAH* 3.1 (1984), 3–36.
- (1988). 'Labor and Unemployment in the Roman Empire: Some Preliminary Remarks', in Weiler (1988: 267–76).

- Pleket, H. W. (1990). 'Wirtschaft und Gesellschaft des Imperium Romanum. 2. Wirtschaft', in W. Fischer and J. A. van Houtte, etc. (eds.), *Handbuch der europäischen Wirtschafts- und Sozialgeschichte* 1 (Stuttgart), 25–160.
- (1994). 'The Roman State and the Economy: The Case of Ephesos', in *Economie antique*, 115–26.
- (2006). 'Concluding Remarks', in Lo Cascio (2006: 319–25).
- Polanyi, K. (1957). 'The Economy as Instituted Process', in K. Polanyi, C. M. Arensberg, and H.W. Pearson, *Trade and Market in the Early Empires: Economies in History and Theory* (Glencoe, IL), 243–70.
- (1977). *The Livelihood of Man* (New York).
- Pollard, N. (2000). *Soldiers, Cities, and Civilians in Roman Syria* (Ann Arbor).
- Pomeranz, K. (2000). *The Great Divergence: China, Europe, and the Making of the Modern World Economy* (Princeton).
- Pomeroy, S. B. (1994). *Xenophon, Oeconomicus: A Social and Historical Commentary* (Oxford).
- Pomey, P. (1982). 'Le navire romain de la Madrague de Giens', *CRAI*, 133–54.
- and A. Tchernia (1978). 'Le tonnage maximum des navires de commerce romains', *Archaeonautica* 2, 233–51.
- Ponsich, M. (1980). 'Nouvelles perspectives sur l'olivier du Bas-Guadalquivir dans l'Antiquité', in *Producción y comercio del aceite*, 47–56.
- (1988). *Aceite de oliva y salazones de pescado: factores geo-económicos de Bética y Tingitania* (Madrid).
- and M. Tarradell (1965). *Garum et industries antiques de salaison dans la Méditerranée* (Paris).
- Prachner, G. (1980). *Die Sklaven und Freigelassenen im arretinischen Sigillatagewerbe* (Wiesbaden).
- Prell, M. (1997). *Sozialökonomische Untersuchungen zur Armut im antiken Rom: von den Gracchen bis Kaiser Diokletian* (Stuttgart).
- Pringsheim, F. (1950). *The Greek Law of Sale* (Weimar).
- Pritchett, W. K. (1953). 'The Attic Stelai, Part I', *Hesperia* 22, 225–99.
- (1961). 'Five New Fragments of the Attic Stelai', *Hesperia* 30, 23–9.
- Procaccini, P. (1981). 'Ancora a proposito dell' "industria" delle lucerne nell'Impero romano', in *Scritti sul mondo antico in memoria di Fulvio Grosso* (Rome), 507–21.
- Producción y comercio del aceite en la antigüedad: primer congreso internacional* (Madrid, 1980).
- Producción y comercio del aceite en la antigüedad: segundo congreso internacional* (Madrid, 1983).
- Provoost, A. (1976). 'Les lampes antiques en terre cuite: introduction et essai de typologie générale avec des détails concernant les lampes trouvées en Italie', *L'Antiquité classique* 45, 5–39, 550–86.
- Prowse, T., H. P. Schwarcz, S. Saunders, R. Macchiarelli, and L. Bondioli (2004). 'Isotopic Paleodiet Studies of Skeletons from the Imperial Roman-Age Cemetery of Isola Sacra, Rome, Italy', *Journal of Archaeological Science* 31, 259–72.
- Pucci, G. (1973). 'La produzione della ceramica aretina: note sull' "industria" nella prima età imperiale romana', *Dial.Arch.* 7, 260–65.
- (1983). 'Pottery and Trade in the Roman Period', in Garnsey et al. (1983: 105–17).

- Pucci, G. (1985). 'Città e economia in età romana: qualche riflessione', in P. Leveau (ed.), *L'origine des richesses dépensées dans la ville antique: actes du colloque organisé à Aix-en-Provence 1984* (Aix-en-Provence), 275–80.
- (1993). 'I bolli sulla *terra sigillata* fra epigrafia e storia economica', in Harris (1993d: 73–9).
- Purcell, N. (1985). 'Wine and Wealth in Roman Italy', *JRS* 75, 1–19.
- (1994). 'The City of Rome and the *Plebs Urbana* in the Late Republic', in *CAH* 9, 2nd edn, 644–88.
- (2000). 'Rome and Italy', in *CAH* 11, 2nd edn, 405–43.
- Raepsaet, G. (1985). 'L'organisation du commerce de la céramique sigillée dans le Nord de la Gaule au II^e siècle', in Y. Burnand and H. Vertet (eds.), *Céramique antique en Gaule: actes du colloque de Metz (1980)* (Nancy), 71–7.
- Ramin, J., and P. Veyne (1981). 'Droit romain et société: les hommes libres qui passent pour esclaves et l'esclavage volontaire', *Historia* 30, 472–97; repr. in Veyne (1991: 247–80).
- Raschke, M. G. (1978). 'New Studies in Roman Commerce with the East', in *ANRW* 2, 9.2, 604–1378.
- Rathbone, D. W. (1983). 'Italian Wines in Roman Egypt', *Opus* 2, 81–98.
- (1991). *Economic Rationalism and Rural Society in Third-Century A.D. Egypt: The Heroninos Archive and the Appianus Estate* (Cambridge).
- (1996a). 'The Imperial Finances', in *CAH* 10, 2nd edn, 309–23.
- (1996b). 'Monetisation, Not Price-Inflation, in Third-Century A.D. Egypt?', in King and Wigg (1996: 321–39).
- (1997). 'Prices and Price-Formation in Roman Egypt', in *Economie antique (Saint-Bertrand-de-Comminges)*, 183–244.
- (2001). 'The "Muziris" Papyrus (SB XVIII 13167): Financing Roman Trade with India', *Bulletin: Société Archéologique d'Alexandrie* 46, 39–50.
- (2003). 'The Financing of Maritime Commerce in the Roman Empire, I–II A.D.', in Lo Cascio (2003: 197–229).
- (2006). 'Poverty and Population in Roman Egypt', in Atkins and Osborne (2006: 100–114).
- Rauh, N. K. (1986). 'Cicero's Business Friendships: Economics and Politics in the Late Roman Republic', *Aevum* 60, 3–30.
- (1989). 'Finance and Estate Sales in Republican Rome', *Aevum* 63, 45–76.
- Le Ravitaillement en blé de Rome et des centres urbains des débuts de la République jusqu'au Haut Empire* (Naples, 1994).
- Rawson, B. (1974). 'Roman Concubinage and Other De Facto Marriages', *TAPhA* 104, 279–305.
- Rawson, E. (1976). 'The Ciceronian Aristocracy and its Properties', in M. I. Finley (ed.), *Studies in Roman Property* (Cambridge), 85–102.
- (1994). 'Caesar: Civil War and Dictatorship', in *CAH* 9, 2nd edn, 424–67.
- Rea, J. (1982). 'P. Lond. inv.1562 verso: Market Taxes in Oxyrhynchus', *ZPE* 46, 191–209.
- Recherches sur les structures sociales dans l'antiquité classique* (Paris, 1970).
- Reden, S. von (2002). 'Money in the Ancient Economy: A Survey of Recent Research', *Klio* 84, 141–74.

- Reger, G. (2007). 'Hellenistic Greece and Western Asia Minor', in Scheidel et al. (2007: 460–83).
- Remesal Rodríguez, J. (1983). 'Ölproduktion und Ölhandel in der Baetica: ein Beispiel für die Verbindung archäologischer und historischer Forschung', *MBAH* 2.2, 91–111.
- (1986). *La annona militaris y la exportación de aceite bético a Germania* (Madrid).
- Renberg, I., M. W. Persson, and O. Emteryd (1994). 'Pre-industrial Atmospheric Lead Contamination Detected in Swedish Lake Sediments', *Nature* 368, 323–6.
- Reynolds, J. (1969). 'Q. Otacilius Pollinus of Aventicum', *Pro Aventico* 20, 53–7.
- Rich, J. W. (1983). 'The Supposed Roman Manpower Shortage of the Later Second Century B.C.', *Historia* 32, 287–331.
- and A. Wallace-Hadrill (eds.) (1991). *City and Country in the Ancient World* (London).
- Richards, M. P., R. E. M. Hedges, T. I. Molleson, and J. C. Vogel (1998). 'Stable Isotope Analysis Reveals Variations in Human Diet at Poundbury Camp Cemetery Site', *Journal of Archaeological Science* 25, 1247–52.
- Rickman, G. (1980). *The Corn Supply of Ancient Rome* (Oxford).
- Riddle, J. M. (1992). *Contraception and Abortion from the Ancient World to the Renaissance* (Cambridge, MA).
- (1997). *Eve's Herbs: A History of Contraception and Abortion in the West* (Cambridge, MA).
- Riley, J. A. (1979). 'Coarse Pottery', in J. A. Lloyd (ed.), *Excavations at Sidi Khrebish, Benghazi (Berenice)* 2 (= *Libya Antiqua*, Supplement 5.2) (Tripoli), 177–212.
- Rilinger, R. (1985). 'Moderne und zeitgenössische Vorstellungen von der Gesellschaftsordnung der römischen Kaiserzeit', *Saeculum* 36, 299–325.
- Ritter, L. S., and W. L. Silber (1989). *Principles of Money, Banking, and Financial Markets*, 6th edn (New York).
- Robert, L. (1969). 'Une inscription honorifique à Athènes', *Ἀρχαιολογικὴ Ἐφημερίς*, 24–30.
- (1975). 'Nonnos et les monnaies d'Akmonia de Phrygie', *Journal des savants*, 153–92.
- Rochon, L. P. (2003). 'On Money and Endogenous Money: Post-Keynesian and Circulation Approaches', in Rochon and Rossi (2003: 115–41).
- and S. Rossi (eds.) (2003). *Modern Theories of Money: The Nature and Role of Money in Capitalist Economies* (Northampton).
- Rodríguez-Almeida, E. (1984). *Il Monte Testaccio* (Rome).
- (1993). 'Graffiti e produzione anforaria della Bética', in Harris (1993d: 95–106).
- Roger, G. B. (1981). 'Le trésor de l'anse Saint-Roch à Antibes', *Archaeonautica* 3, 266–434.
- Roger, J. (1945). 'Inscriptions de la région du Strymon', *Revue archéologique* ser. 6, 24, 37–55.
- Rostovtzeff, M. I. (1957). *The Social and Economic History of the Roman Empire*, 2nd edn (Oxford, 2 vols).
- Rougé, J. (1966). *Recherches sur l'organisation du commerce maritime en Méditerranée sous l'Empire romain* (Paris).
- (1980). 'Prêt et société maritime dans le monde romain', in D'Arms and Kopff (1980: 291–304).

- Rougé, J. (1990). 'Aspects de la pauvreté et de ses remèdes aux IVe–Ve siècles', in *Atti dell'Accademia Romanistica Costantiniana: VIII convegno internazionale* (Naples), 227–48.
- Rowlandson, J. (1996). *Landowners and Tenants in Roman Egypt: The Social Relations of Agriculture in the Oxyrhynchite Nome* (Oxford).
- (2001). 'Money Use among the Peasantry of Ptolemaic and Roman Egypt', in A. Meadows and K. Shipton (eds.), *Money and its Uses in the Ancient Greek World* (Oxford), 145–55.
- Rutz, H. J., and B. S. Orlove (eds.) (1989). *The Social Economy of Consumption* (Lanham, MD).
- Sablairolles, R. (1996). *Libertinus miles: les cohortes de vigiles* (Rome).
- Sacconi, G. (1971). *Ricerche sulla delegazione in diritto romano* (Milan).
- Sahlins, M. (1972). *Stone Age Economics* (New York).
- Sallares, R. (2007). 'Ecology', in Scheidel et al. (2007: 15–37).
- Saller, R. (1994). *Patriarchy, Property and Death in the Roman Family* (Cambridge).
- (2002). 'Framing the Debate over Growth in the Ancient Economy', in Scheidel and von Reden (2002: 251–69); repr. in Manning and Morris (2005: 223–38).
- Samson, R. (1988). 'Rural Slavery, Inscriptions, Archaeology and Marx', *Historia* 38, 99–110.
- Samuelson, P. A., and W. D. Nordhaus (1998). *Macroeconomics*, 16th edn (Boston).
- Sartori, F. (1981). 'Padova nello stato romano', in *Padova antica: da comunità paleoveneta a città romano-cristiana* (Padua), 97–189.
- Satlow, M. L. (2005). 'Marriage Payments and Succession Strategies in the Documents from the Judaean Desert', in R. Katzoff and D. Schaps (eds.), *Law in the Documents of the Judaean Desert* (Leiden), 51–65.
- Scheffold, K. (1957). *Die Wände Pompejis: topographisches Verzeichnis der Bildmotive* (Berlin).
- Scheidel, W. (1990). 'Feldarbeit von Frauen in der antiken Landwirtschaft', *Gymnasium* 97, 405–31.
- (1994). 'Grain Cultivation in the Villa Economy of Roman Italy', in Carlsen et al. (1994: 159–66).
- (1995–96). 'The Most Silent Women of Greece and Rome: Rural Labour and Women's Life in the Ancient World', *Greece & Rome* 47, 202–17; 48, 1–10.
- (1996a). *Measuring, Sex, Death and Age in the Roman Empire: Explorations in Ancient Demography* (JRA Supplementary Series 21) (Ann Arbor).
- (1996b). 'Finances, Figures and Fiction', *CQ* 46, 222–38.
- (1996c). 'Reflections on the Differential Valuation of Slaves in Diocletian's Price Edict and in the United States', *MBAH* 15.1, 67–79.
- (1997). 'Quantifying the Sources of Slaves in the Roman Empire', *JRS* 87, 159–69.
- (2000). 'Slaves of the Soil' (review article), *JRA* 13, 727–32.
- (2005). 'Human Mobility in Roman Italy, II: The Slave Population', *JRS* 95, 64–79.
- (2006). 'Stratification, Deprivation and Quality of Life', in Atkins and Osborne (2006: 40–59).

- Scheidel, W. (2007). 'Demography', in Scheidel et al. (2007: 38–86).
- (2008/forthcoming). 'Real Wages in Early Economies: Evidence for Living Standards from 2000 BCE to 1300 CE', forthcoming in *Journal of the Economic and Social History of the Orient*, cited from *Princeton/Stanford Working Papers in Classics*: www.princeton.edu/~pswpc/
- (ed.) (2009). *Rome and China: Comparative Perspectives on Ancient World Empires* (Oxford).
- and S. J. Friesen (2009). 'The Size of the Economy and the Distribution of Income in the Roman Empire', *JRS* 99, 61–91.
- I. Morris, and R. Saller (eds.) (2007). *The Cambridge Economic History of the Greco-Roman World* (Cambridge).
- and S. von Reden (eds.) (2002). *The Ancient Economy* (Edinburgh).
- Schiavone, A. (ed.) (1988–93). *Storia di Roma* (Turin, 7 vols).
- Schiller, A. A. (1935). 'The Business Relations of Patron and Freedman in Classical Roman Law', in *Legal Essays in Tribute to Orrin Kip McMurray* (Berkeley), 623–39; repr. in *An American Experience in Roman Law* (Göttingen, 1971), 24–40.
- Schleich, T. (1983, 1984). 'Überlegungen zum Problem senatorischer Handelsaktivitäten', *MBAH* 2.2, 65–90; 3.1, 37–76.
- Schlippschuh, O. (1974). *Die Händler im Römischen Kaiserreich in Gallien, Germanien und den Donauprovinzen Rätien, Noricum und Pannonien* (Amsterdam).
- Schmidt, M. (1978). 'Zur Diskussion über die Klassenverhältnisse in der Antike', in *Gesellschaftsformationen in der Geschichte* (Berlin), 116–29.
- Schneider, G. (1993). 'X-Ray Fluorescence Analysis and the Production and Distribution of Terra Sigillata and Firmalampen', in Harris (1993d: 129–37).
- (2000). 'X-Ray Fluorescence Analysis of Vernice Nera, Terra Sigillata and Firmalampen from Northern Italy', in Brogiolo and Olcese (2000: 103–6).
- and E. Wirz (1991). 'Chemical Answers to Archaeological Questions: Roman Terracotta Lamps as Documents of Economic History', *Documents et Travaux IGAL* 15 (Paris), 1–43.
- Schneider, H. (1986). 'Infrastruktur und Legitimation im frühen Prinzipat', *Opus* 5, 23–51.
- (1990). 'Die Bücher-Meyer Kontroverse', in W. M. Calder and A. Demandt (eds.), *Eduard Meyer: Leben und Leistung eines Universalhistorikers* (Leiden), 417–45.
- Schrunk, I., and V. Begovic (2000). 'Roman Estates on the Island of Brioni, Istria', *JRA* 13, 253–76.
- Schumpeter, J. (1927/1955). 'Die sozialen Klassen im ethnisch homogenen Milieu', *Archiv für Sozialwissenschaft und Sozialpolitik* 57 (1927), 1–67; cited from *Imperialism and Social Classes* (trans. H. Norden, New York, 1955 edn), 101–68.
- Schütz, N. M. (2002). 'Alltägliche Gebrauchsgegenstände aus Eisen aus der Stadt auf dem Magdalensberg', *Carinthia* 1.192, 48–84.
- Schwartz, J. (1978). 'La monnaie et l'évolution des prix en Égypte romaine', in *Les 'dévaluations' à Rome, époque républicaine et impériale* (Rome), 169–79.
- Scott, I. C. (1985). 'First Century Military Daggers and the Manufacture and Supply of Weapons for the Roman Army', in Bishop (1985b: 160–213).

- Seaford, R. (2004). *Money and the Early Greek Mind: Homer, Philosophy, Tragedy* (Cambridge).
- Serrao, F., and A. di Porto (1977). 'Diritto romano', *Studi romani* 25, 234–54.
- Seyrig, H. (1941). 'Inscriptions grecques de l'agora de Palmyre', *Syria* 22, 155–74; repr. in *Antiquités syriennes* 3 (Paris, 1946), 142–61.
- Shackleton Bailey, D. R. (ed.) (1965–70). *Cicero: Letters to Atticus* (Cambridge, 7 vols).
- Shatzman, I. (1975). *Senatorial Wealth and Roman Politics* (Brussels).
- Shaw, B. D. (1981). 'Rural Markets in North Africa and the Political Economy of the Roman Empire', *Antiquités africaines* 17, 37–83.
- (1984). Review of De Ste. Croix (1981), *Economy and Society* 13, 208–49.
- (1991). 'The Cultural Meaning of Death: Age and Gender in the Roman Family', in D. I. Kertzer and R. P. Saller (eds.), *The Family in Italy from Antiquity to the Present* (New Haven), 66–90.
- (1994). Review of Parkin (1992), *CPh* 89, 190–91.
- Sheridan, R. B. (1985). *Doctors and Slaves: A Medical and Demographic History of Slavery in the British West Indies, 1680–1834* (Cambridge).
- Sherwin-White, A. N. (1966). *The Letters of Pliny: A Historical and Social Commentary* (Oxford).
- Sherwin-White, S. M. (1978). *Ancient Cos: An Historical Study from the Dorian Settlement to the Imperial Period* (Göttingen).
- Shifman, I. S. (1980). *Palmirskii poshlinnyi tarif* (Moscow).
- Shotyk, W., et al. (1998). 'History of Atmospheric Lead Deposition since 12,370 ¹⁴C yr BP from a Peat Bog, Jura Mountains, Switzerland', *Science* 281, 1635–9.
- Shryock, H. S., J. S. Siegel, and associates (2004). *The Methods and Materials of Demography*, 2nd edn (New York; 1st edn 1976).
- Shtaerman, E. M. (1969). *Die Blütezeit der Sklavenwirtschaft in der römischen Republik* (Wiesbaden); originally published as *Rastsvet rabovladelcheskikh otnoshenii v Rimskoi respublike* (Moscow, 1964).
- V. M. Smirin, N. N. Belova, and I. K. Kolosovskaia (1987). *Die Sklaverei in den westlichen Provinzen des römischen Reiches im 1.–3. Jahrhundert* (Stuttgart); originally published as *Rabstvo v zapadnykh provintsiiakh Rimskoi imperii v 1.–3. vv.* (Moscow, 1977).
- and M. K. Trofimova (1975). *La schiavitù nell'Italia imperiale* (Rome); originally published as *Rabovladelcheskie otnoshenija v rannej rimskoj imperii (Italija)* (Moscow, 1971).
- Siani-Davies, M. (1996). 'Gaius Rabirius Postumus: A Roman Financier and Caesar's Political Ally', *Arctos* 30, 207–40.
- (1997). 'Ptolemy XII Auletes and the Romans', *Historia* 46, 306–40.
- Sidebotham, S. E. (1986). *Roman Economic Policy in the Erythra Thalassa, 30 B.C.–A.D. 217* (Leiden).
- (1992). 'A Roman Fort on the Red Sea Coast', *Minerva* 3.2, 5–8.
- (2008). 'Archaeological Evidence for Ships and Harbor Facilities at Berenike (Red Sea Coast, Egypt)', in Hohlfelder (2008: 305–24).
- Siebert, G. (2001). *L'Îlot des Bijoux, l'Îlot des Bronzes, la Maison des Sceaux*, 1 (= *Exploration archéologique de Délos* 38) (Athens).

- Sippel, D. V. (1987). 'Some Observations on the Means and Cost of Transport of Bulk Commodities in the Late Republic and Early Empire', *Ancient World* 16, 35–45.
- Sirks, B. (1990). *Food for Rome: The Legal Structure of the Transportation and Processing of Supplies for the Imperial Distributions in Rome and Constantinople* (Amsterdam).
- Solier, Y. (1981). 'Les Épaves de Gruissan', *Archaeonautica* 3, 8–264.
- Solin, H. (1977). 'Die Namen der orientalischen Sklaven in Rom', in *L'Onomastique latine* (Colloques internationaux du centre national de la recherche scientifique 564) (Paris), 205–20.
- Spufford, M. (1976). 'Peasant Inheritance Customs and Land Distribution in Cambridgeshire from the Sixteenth to the Eighteenth Centuries', in Goody et al. (1976: 156–76).
- Spurr, M. (1986). *Arable Cultivation in Roman Italy, c.200 B.C.–c. A.D. 100* (London).
- Srinivasan, T. N. (1981). 'Malnutrition: Some Measurement and Policy Issues', *Journal of Development Economics* 8, 3–19.
- Staerman: see Shtaerman.
- Steckel, R. H. (2005). 'Health and Nutrition in the Pre-industrial Era: Insights from a Millennium of Average Heights in Northern Europe', in Allen et al. (2005a: 227–53).
- Stedman Jones, G. (1976). 'From Historical Sociology to Theoretical History', *British Journal of Sociology* 27, 295–305; repr. in R. S. Neale (ed.), *History and Class: Essential Readings in Theory and Interpretation* (Oxford, 1983), 73–85.
- Steinby: see Abbreviations under *LTUR*.
- Steinby, M. (1978). 'Ziegelstempel von Rom und Umgebung', *RE Suppl.* 15, cols 1489–1531.
- (1981). 'La diffusione dell'*opus doliare* urbano', in Giardina and Schiavone (1981: 2.237–45).
- Stelzenberger, B. (2008). *Kapitalmanagement und Kapitaltransfer im Westen des Römischen Reiches* (Rahden, Westfalen).
- Sternini, M. (1993). 'I vetri', in Harris (1993d: 81–94).
- Stöckle, A. (1924). 'Berufsvereine', *RE Suppl.* 4, cols 155–211.
- Straus, J. A. (2004). *L'achat et la vente des esclaves dans l'Égypte romaine: contribution papyrologique à l'étude de l'esclavage dans une province orientale de l'empire romain* (Munich).
- Strobel, K. (2002). 'Geldwesen und Währungsgeschichte des Imperium Romanum im Spiegel der Entwicklung des 3. Jahrhunderts n.Chr.', in Strobel (ed.), *Die Ökonomie des Imperium Romanum: Struktur, Modelle und Wertungen im Spannungsfeld von Modernismus und Neoprimitivismus: Akten des 3. Trierer Symposiums zur antiken Wirtschaftsgeschichte* (St Katharinen), 86–168.
- Strubbe, J. H. M. (1987, 1989). 'The Sitonia in the Cities of Asia Minor under the Principate', *Epigraphica Anatolica* 10, 45–82; 13, 99–122.
- Susini, G. (1971). 'Colonia Concordia Brixillum', *Rivista storica dell'antichità* 1, 119–25.
- Sylla, R. (2002). 'Financial Systems and Economic Modernization', *Journal of Economic History* 62, 277–92.
- Syme, R. (1939). *The Roman Revolution* (Oxford).
- (1958). *Tacitus* (Oxford, 2 vols).
- Tacoma, L. E. (2006). *Fragile Hierarchies: The Urban Elites of Third Century Roman Egypt* (Leiden).

- Tarn, W. W. (1952). *Hellenistic Civilization*, 3rd edn (London).
- Tassaux, F. (1982). 'Laecanii: recherches sur une famille sénatoriale d'Istrie', *MEFRA* 94, 227–69.
- Taubenschlag, R. (1944). *The Law of Greco-Roman Egypt in the Light of the Papyri*, 332 B.C.–640 A.D. (New York).
- Tawfik, Z. (1997). 'Wet-Nursing Stipulations in Greek Papyri and Arabic Sources', in *Akten des 21. Internationalen Papyrologenkongresses* (Stuttgart), 939–53.
- Tchernia, A. (1964). 'Amphores et marques d'amphores de Bétique à Pompéi et à Stabies', *MEFRA* 76, 419–49.
- (1967). 'Les amphores romaines et l'histoire économique', *Journal des Savants*, 216–34.
- (1980). 'D. Caecilius Hospitalis et M. Iulius Hermesianus (CIL 1625b et 20742)', in *Producción y comercio del aceite*, 155–60.
- (1983). 'Italian Wine in Gaul at the End of the Republic', in Garnsey et al. (1983: 87–104).
- (1986a). 'Amphores et textes: deux exemples', in Empereur and Garlan (1986: 31–6).
- (1986b). *Le vin de l'Italie romaine* (Rome, 1986).
- (1989). 'Encore sur les modèles économiques et les amphores', in *Amphores romaines*, 529–36.
- (2003). 'Remarques sur la crise de 33', in Lo Cascio (2003: 131–46).
- (forthcoming, 2011). 'L' utilisation des gros tonnages', in Harris and Iara (forthcoming, 2011).
- and D. Viviers (2000). 'Athènes, Rome et leur avant- ports: "mégapoles" antiques et trafics méditerranéens', in C. Nicolet, R. Ilbert, and J.-C. Depaule (eds.), *Mégapoles méditerranéennes* (Paris), 761–801.
- Tecnologia, economia e società nel mondo romano: atti del convegno di Como* (Como, 1980).
- Teixidor, J. (1984). *Un port romain du désert: Palmyre et son commerce d'Auguste à Caracalla* (Semitica 34) (Paris).
- Temin, P. (2001). 'A Market Economy in the Early Roman Empire', *JRS* 91, 169–81.
- (2004). 'Financial Intermediation in the Early Roman Empire', *Journal of Economic History* 64, 705–33.
- (forthcoming). 'Escaping Malthus: Economic Growth in the Early Roman Empire', in W. Jongman (ed.), *Economic Growth in Classical Antiquity*.
- Il Territorio Veronese in età romana* (Verona, 1973).
- Thomas, H. (1997). *The Slave Trade: The Story of the Atlantic Slave Trade 1440–1870* (New York).
- Thompson, E. P. (1966). *The Making of the English Working Class* (London).
- (1978). 'Eighteenth-Century English Society: Class Struggle without Class?', *Social History* 3, 146–50.
- Thompson, L. A. (1982). 'On "Development" and "Underdevelopment" in the Early Roman Empire', *Klio* 64, 383–401.
- Thompson, W. E. (1982). 'The Athenian Entrepreneur', *L'Antiquité classique* 51, 53–85.
- Thompson, W. S. (1953). *Population Problems*, 4th edn (New York).

- Thorley, J. (1971). 'The Silk Trade between China and the Roman Empire at its Height, circa A.D. 90–130', *Greece and Rome* 18, 71–80.
- Thür, G. (1988). 'Zum Darlehen kata Mouzeirin P. Vindob. G 40822', *Tyche* 3, 229–33.
- Tilly, L. A., R. G. Fuchs, D. I. Kertzer, and D. L. Ransel (1992). 'Child Abandonment in European History: A Symposium', *Journal of Family History* 17, 1–23.
- Tite, M. S. (1972). *Methods of Physical Examination in Archaeology* (London).
- Todaro, M. P. (1997). *Economic Development* (London, 1997).
- Toepel, L. R. (1973). *Studies in the Administrative and Economic History of Tebtunis in the First Century A.D.* (dissertation, Duke University).
- Tolles, R. (1941). *Untersuchungen zur Kindesaussetzung bei den Griechen* (dissertation, Universität Breslau).
- Tomber, R. (1987). 'Evidence for Long-Distance Commerce: Imported Bricks and Tiles at Carthage', *Acta RCRF* 25–26, 161–74.
- Torelli, M. (1980). 'Innovazioni nelle tecniche edilizie romane tra il I sec.a.C. e il I sec. d.C.', in *Tecnologia, economia e società* (Como), 139–62.
- Tozzi, P. L. (1972). *Storia padana antica* (Milan).
- (1974a). 'Una nuova via romana fra Milano e Cremona', *Athenaeum* 52, 320–25.
- (1974b). *Saggi di topografia storica* (Florence).
- Treggiari, S. (1969). *Roman Freedmen during the Late Republic* (Oxford).
- (1975a). 'Jobs in the Household of Livia', *PBSR* 43, 48–77.
- (1975b). 'Family Life among the Staff of the Volusii', *TAPhA* 105, 393–401.
- (1976). 'Jobs for Women', *American Journal of Ancient History* 1, 76–104.
- (1979). 'Lower Class Women in the Roman Economy', *Florilegium* 1, 65–86.
- (1980). 'Urban Labour in Rome: *Mercennarii* and *Tabernarii*', in Garnsey (1980: 48–64).
- (1984). 'Digna Condicio: Betrothals in the Roman Upper Class', *Echos du Monde Classique* n.s. 3, 419–51.
- Treister, M. Y. (1996). *The Role of Metals in Ancient Greek History* (Mnemosyne Suppl. 156) (Leiden).
- Trigger, B. G. (2003). *Understanding Early Civilizations: A Comparative Study* (Cambridge).
- Trümper, M. (2009). *Graeco-Roman Slave Markets: Fact or Fiction?* (Oxford).
- Tscherikower, V. (1937). 'Palestine under the Ptolemies (A Contribution to the Study of the Zenon Papyri)', *Mizraim* 4–5, 9–90.
- Uggeri, G. (1975). *La romanizzazione dell'antico delta padano* (Ferrara).
- (1985). 'L'insediamento antico e altomedievale nel Delta del Po', in *Atti della Tavola Rotonda sul tema il Delta del Po: sezione geoantropica* (Bologna), 1–60.
- (1987). 'La navigazione interna della Cisalpina in età romana', in *Vita sociale, artistica e commerciale di Aquileia romana (Antichità Altoadriatiche 29)* (Udine), 2, 305–54.
- Unger, R. W. (1980). *The Ship in the Medieval Economy, 600–1600* (London).
- Urbach, E. E. (1964). 'The Laws Regarding Slavery as a Source for Social History of the Period of the Second Temple, the Mishnah and Talmud', *Papers of the Institute of Jewish Studies* 1, 1–94.
- Utchenko, S. L., and I. M. Diakonov (1970). *Social Stratification of Ancient Society* (Moscow).

- van der Veen, M. (1998). 'A Life of Luxury in the Desert? The Food and Fodder Supply to Mons Claudianus', *JRA* 11, 101–16.
- Van Minnen, P. (1986). 'The Volume of the Oxyrhynchite Textile Trade', *MBAH* 5.2, 88–95.
- (2008). 'Money and Credit in Roman Egypt', in Harris (2008b: 226–41).
- Van Zanden, J. L. (2005). 'What Happened to the Standard of Living Before the Industrial Revolution? New Evidence from the Western Part of the Netherlands', in Allen et al. (2005a: 173–94).
- Vauthey, M., and P. Vauthey (1973). 'Les courants artistiques et économiques de l'industrie céramique dans l'antiquité: d'Arezzo aux confins de l'empire à travers la Gaule romaine', *Revue archéologique du Centre* 12, 115–26.
- Vegas, M. (1973). *Cerámica común romana del Mediterráneo occidental* (Barcelona).
- Velkov, V. (1967). *Robstvoto v Trakija i Mizija prez Antichnostta* (Sofia).
- Verboven, K. (2000). 'L'organisation des affaires financières des C. Sulpicii de Pouzozoles', *Cahiers du Centre Gustave-Glotz* 11, 161–71.
- (2002). *The Economy of Friends: Economic Aspects of Amicitia and Patronage in the Late Republic* (Brussels).
- (2003). '54–44 BCE: Financial or Monetary Crisis?', in Lo Cascio (2003: 49–68).
- Verlinden, C. (1955, 1977). *L'esclavage dans l'Europe médiévale* (Ghent, 2 vols).
- Vertet, H. (1967). 'Céramique sigillée tibérienne à Lezoux', *Revue archéologique*, 255–86.
- Verzar Bass, M. (1983). 'Contributo alla storia sociale di Aquileia repubblicana: la documentazione archeologica', in Les 'bourgeoisies' municipales, 205–15.
- Veyne, P. (1961). 'Vie de Trimalcion', *Annales ESC* 16, 213–47; revised in Veyne (1991: 13–56).
- (1976). *Le pain et le cirque* (Paris).
- (1979a). 'Rome devant la prétendue fuite de l'or: mercantilisme ou politique disciplinaire?', *Annales ESC* 32, 211–44; revised in Veyne (1991: 163–215).
- (1979b). 'Mythe et réalité de l'autarcie à Rome', *RÉA* 81 (1979), 261–80; revised in Veyne (1991: 131–62).
- (1991). *La société romaine* (Paris).
- (2000). 'La "plèbe moyenne" sous le Haut-empire romain', *Annales: histoire, sciences sociales* 55, 1169–99.
- Vidal-Naquet, P. (1968). 'Les esclaves grecs étaient-ils une classe?', *Raison présente* 6, 103–12.
- Villeneuve, F. (2004). 'Une inscription latine sur l'archipel Farasân, Arabie Séoudite, sud de la Mer Rouge', *CRAI*, 419–29.
- Violante, C. (1953). *La società milanese nell'età precomunale* (Bari).
- Virlouvet, C. (1985). *Famines et émeutes à Rome des origines de la République à la mort de Néron* (Rome).
- (1994). 'Les lois frumentaires d'époque républicaine', in *Le Ravitaillement en blé de Rome*, 11–28.
- Voci, P. (1963, 1967). *Diritto ereditario romano* (Milan, 2 vols).
- Volkman, H. (1961). *Die Massenversklavungen der Einwohner erobelter Städte in der hellenistisch-römischen Zeit* (Wiesbaden; 2nd edn Stuttgart, 1990).
- Wacke, A. (1980). 'Die *potentiores* in den Rechtsquellen: Einfluss und Abwehr gesellschaftlicher Übermacht in der Rechtspflege der Römer', *ANRW* 2.13, 562–607.

- Walbank, F. W. (1957–79). *A Historical Commentary on Polybius* (Oxford, 3 vols).
- Wallace, S. L. (1938). *Taxation in Egypt from Augustus to Diocletian* (Princeton).
- Wallace-Hadrill, A. (1991). 'Elites and Trade in the Roman Town', in Rich and Wallace-Hadrill (1991: 241–72).
- Wallon, H. A. (1879). *Histoire de l'esclavage dans l'antiquité*, 2nd edn (Paris, 3 vols).
- Walton Rogers, P., L. B. Jørgensen, and A. Rast-Eicher (eds.) (2001). *The Roman Textile Industry and its Influence* (Oxford).
- Warden, P. D., and R. S. Bagnall (1988). 'The Forty Thousand Citizens of Ephesus', *CPh* 83, 220–23.
- Ward-Perkins, B. (1983). 'La città altomedievale', *Archeologia medievale* 10, 111–24.
- (2005). *The Fall of Rome: The End of Civilization* (Oxford).
- Ward-Perkins, J. B. (1970). In A. Boethius and J.B. Ward-Perkins, *Etruscan and Roman Architecture* (Harmondsworth).
- (1980). 'Nicomedia and the Marble Trade', *PBSR* 48, 23–69.
- and A. Claridge (1978). *Pompeii A.D. 79* (London).
- Warmington, E. H. (1974). *The Commerce between the Roman Empire and India*, 2nd edn (London).
- Watson, A. (1965). *The Law of Obligations in the Later Roman Republic* (Oxford).
- (1971). *The Law of Succession in the Later Roman Republic* (Oxford).
- (ed.) (1985). *The Digest of Justinian* (Philadelphia).
- Watson, G. R. (1969). *The Roman Soldier* (London).
- Weaver, P. R. C. (1972). *Familia Caesaris* (Cambridge).
- (1991). 'Children of Freedmen (and Freedwomen)', in B. Rawson (ed.), *Marriage, Divorce and Children in Ancient Rome* (Oxford), 166–90.
- Weber, M. (1923). *Wirtschaftsgeschichte* (Munich).
- Weiler, I. (ed.) (1988). *Soziale Randgruppen und Aussenseiter im Altertum* (Graz).
- Weiss, A. (2009). 'Hermas' "Biography": Social Upward and Downward Mobility of an Independent Freedman', *Ancient Society* 39, 185–202.
- Weiss, K. M. (1973). *Demographic Models for Anthropology* (Memoirs of the Society for American Archaeology 27) (Washington, DC).
- Welch, K. (2003). 'A New View of the Origins of the Basilica', *JRA* 16, 5–34.
- Wells, C. M. (1977). 'Manufacture, Distribution and Date: Some Methodological Considerations on the Dating of Augustan Terra Sigillata', *Acta RCRF* 17/18, 132–40.
- West, L. C. (1924). 'Commercial Syria under the Roman Empire', *TAPhA* 55, 159–89.
- and A. C. Johnson (1944). *Currency in Roman and Byzantine Egypt* (Princeton).
- Westermann, W. L. (1955). *The Slave Systems of Greek and Roman Antiquity* (Philadelphia).
- Whitehouse, D. (1991). 'Roman Trade in Perspective', in V. Begley and R. V. de Puma (eds.), *Rome and India: The Ancient Sea Trade* (Madison), 216–18.
- Whitley, J. (2002–3). 'Archaeology in Greece 2002–2003', *Archaeological Reports* 49, 1–88.
- Whittaker, C. R. (1978). 'Land and Labour in North Africa', *Klio* 56, 331–62; repr. in Whittaker (1993b).
- (1980). 'Rural Labour in Three Roman Provinces', in Garnsey (1980: 73–99); repr. in Whittaker (1993b).

- Whittaker, C. R. (1985). 'Trade and Aristocracy in the Roman Empire', *Opus* 4, 49–75; repr. in Whittaker (1993b).
- (1993a). 'The Poor', in Giardina (1993b: 272–99); repr. in Whittaker (1993b).
- (1993b). *Land, City and Trade in the Roman Empire* (Aldershot).
- Wickham, C. (1981). *Early Medieval Italy* (London).
- Wiedemann, T. E. J. (1985). 'The Regularity of Manumission at Rome', *CQ* 35, 162–75.
- Wierschowski, L. (1984). *Heer und Wirtschaft: das römische Heer der Prinzipatszeit als Wirtschaftsfaktor* (Bonn).
- Wightman, E. M. (1985). *Gallia Belgica* (London).
- Wild, J. P. (1970). *Textile Manufacture in the Northern Roman Provinces* (Cambridge).
- Wilkes, J. J. (1969). *Dalmatia* (London).
- Will, E. (1989). 'Relazioni mutue tra le anfore romane', in *Amphores romaines*, 297–309.
- Williams, D. F., and D. P. S. Peacock (1983). 'The Importation of Olive-Oil into Iron Age and Roman Britain', in *Producción y comercio del aceite*, 263–80.
- Williams, E. (1944). *Capitalism and Slavery* (Chapel Hill, NC).
- Williams, J. H. C. (1998). 'Coinage, Credit and the Aerarium in the 80s BC', in *Coins of Macedonia and Rome: Essays in Honour of Charles Hersh* (London), 173–83.
- Willing, M. (1998). 'Ökonomische Aspekte des 1. römisch-karthaginischen Krieges', in *Imperium Romanum: Studien zu Geschichte und Rezeption. Festschrift für K. Christ zum 75. Geburtstag* (Stuttgart), 784–804.
- Wilson, A. I. (2002). 'Machines, Power, and the Ancient Economy', *JRS* 92, 1–32.
- (2007). 'The Metal Supply of the Roman Empire', in E. Papi (ed.), *Supplying Rome and the Roman Empire* (*JRA Supplement* 69) (Portsmouth, RI), 109–25.
- (2008). 'Large-Scale Manufacturing, Standardization, and Trade', in Oleson (2008: 393–417).
- (2009a). 'Approaches to Quantifying Roman Trade', in Bowman and Wilson (2009a: 213–49).
- (2009b). 'Villas, Horticulture and Irrigation Infrastructure in the Tiber Valley', in F. Coarelli and H. Patterson (eds.), *Mercator Placidissimus: The Tiber Valley in Antiquity. New Research in the Upper and Middle River Valley* (Rome), 731–68.
- Wipszycka, E. (1965). *L'industrie textile dans l'Égypte romaine* (Wrocław).
- Wissemann, M. (1984). 'Die Spezialisierung des römischen Handels', *MBAH* 3.1, 116–24.
- Wolters, R. (1990, 1991). 'Zum Waren- und Dienstleistungsaustausch zwischen dem Römischen Reich und dem Freien Germanien in der Zeit des Prinzipats: eine Bestandsaufnahme', *MBAH* 9.1, 14–44; and 10.1, 78–132.
- Woolf, G. (1990). 'Food, Poverty and Patronage: The Significance of the Epigraphy of the Roman Alimentary Schemes in Early Imperial Italy', *PBSR* 58, 197–228.
- (2001). 'Regional Production in Early Roman Gaul', in Mattingly and Salmon (2001: 49–65).
- (2006). 'Writing Poverty in Rome', in Atkins and Osborne (2006: 83–99).
- Yeo, C. (1946). 'Land and Sea Transportation in Imperial Italy', *TAPhA* 77, 221–44.
- Youtie, H. C. (1975). '"Because they do not know letters"', *ZPE* 19, 101–8; repr. in *Scriptiunculae Posteriores* 1 (Bonn), 255–62.
- Zelener, Y. (2006). 'Between Technology and Productivity', in Lo Cascio (2006: 303–18).

- Zevi, F. (1967). 'Anfore istriane ad Ostia', *Atti e Memorie della Società istriana di archeologia e storia patria* n.s. 15, 21–31.
- (1989). 'Introduzione', in *Amphores romaines*, 3–19.
- (1994). 'Le grandi navi mercantili, Puteoli e Roma', in *Le Ravitaillement en blé de Rome*, 61–8.

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